

INDEX

Sl.no.	Editorial	Pg.no.
1.	Multilateral Export Control Regimes (MECR)	3
2.	Dhole	16
3.	Article 31 C	19
4.	Women Reservation Act, 2023	40
5.	India and RCEP	44
6.	Fiscal Policy 03-05-2024	47
7.	What is Lithium?	55
8.	Finance Commission of India (FCI)	58
9.	World Bank's Plan to Combat Methane Emissions	65
10.	Official languages under the Indian Constitution	70
11.	Centre State Financial Relations	76
12.	Tanjore painting	83
13.	Jet Streams: Formation, Types, Distribution, and Effects	89
14.	Stupa Architecture	97
15.	Tidal currents	120
16.	Features of Vedic Period	128
17.	Wavell Plan	139
18.	Project Cheetah – Prospects and Challenges	146
19.	ECONOMIC CURVES	153
20.	Emergency Provisions in Indian Constitution	175

21.	Western Coastal Plain and Eastern Coastal Plain	185
22.	Biodiversity Act	189
23.	Monoclonal Antibodies 2024	200
24.	Near Field Communications	204
25.	Syed Ahmad Khan (1817-1898)	212
26.	Vienna convention on diplomatic relations 1961	215
27.	Genome editing and Genetically modified organisms	224
28.	Indian Rock System	229
29.	Jain Art and Architecture	239
30.	What are Off-Budget Liabilities?	252

1. Multilateral Export Control Regimes (MECR)

- Multilateral Export Control Regimes (MECR) are **voluntary and non-binding agreements** created by the major supplier countries that have agreed to co-operate in their effort to prevent and regulate the transfer of certain military and dual use technology.
- **Multilateral Export Control Regimes are blocs set up with the aim of restricting and/or monitoring the trade of dangerous goods:** arms – nuclear, chemical and other weapons of mass destruction in particular; the materials and technologies used in the manufacture of weapons; and so-called dual-use goods, which have both civilian and military purposes.
- **It aims at preventing the proliferation of Weapons of Mass Destruction (WMD).**
 - They are **independent of the United Nations.**
 - **Their regulations apply only to members and it is not obligatory for a country to join.**
- **There are currently four such regimes under MECR**
 - The **Nuclear Suppliers Group (NSG)**, for the control of nuclear related technology.
 - The **Australia Group (AG)** for control of chemical and biological technology that could be weaponized.
 - The **Missile Technology Control Regime (MTCR)** for the control of rockets and other aerial vehicles capable of delivering weapons of mass destruction.
 - The **Wassenaar Arrangement** on Export Controls for Conventional Arms and Dual-Use Goods and Technologies.
- **India is now a member of three of the four MECRs, except the Nuclear supplier Group.**
- **Nuclear Suppliers Group (NSG)**

- The Nuclear Suppliers Group is a **group of nuclear supplier countries that seeks to contribute to the non-proliferation of nuclear weapons** through the implementation of two sets of guidelines for nuclear exports and nuclear-related exports.
- The **NSG first met in November 1975 in London**, and is thus popularly referred to as the '**London Club** ' (**'Club de Londres'**).
- **Membership**
 - **48 supplier states:** Argentina, Australia, Austria, Belarus, Belgium, Brazil, Bulgaria, Canada, China, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Japan, Kazakhstan, Republic of Korea, Latvia, Lithuania, Luxembourg, Malta, Mexico, Netherlands, New Zealand, Norway, Poland, Portugal, Romania, Russian Federation, Serbia, Slovakia, Slovenia, South Africa, Spain, Sweden, Switzerland, Turkey, Ukraine, United Kingdom, and United States.
 - **Permanent Observer:** European Commission.
 - **India is not a member of the NSG** because all its efforts were consistently blocked by China and some other members.
 - India's bid for membership being blocked on the ground of India **being a non-signatory to the nuclear non-proliferation treaty**.
 - China demanded for a non-discriminatory procedures for entry of the countries that haven't signed NPT.
 - China to further obstruct India's membership demand, had clubbed India's membership bid with that of Pakistan's. However, Pakistan's credentials for membership is extremely inaccurate.
- **Membership Criteria**
- **Factors taken into account for membership** include the following:
 - The **ability to supply items** (including items in transit) covered by the annexes to Parts 1 and 2 of the NSG Guidelines;

- **Adherence to the Guidelines and action in accordance with them;**
- **Enforcement of a legally based domestic export control system** which gives effect to the commitment to act in accordance with the Guidelines;
- **Full compliance with the obligations of one or more of the following:** the Treaty on the Non-Proliferation of Nuclear Weapons (NPT), the Treaties of Pelindaba, Rarotonga, Tlatelolco, Bangkok, or an equivalent international nuclear non-proliferation agreement; and
- **Support of international efforts towards nonproliferation of weapons of mass destruction and of their delivery vehicles.**
- **Goals**
- NSG members pursue the aims of the NSG through adherence to NSG Guidelines that are **adopted by consensus, and through an exchange of information**, notably on developments of nuclear proliferation concern.
 - The **first set of NSG Guidelines governs the export of items that are especially designed or prepared for nuclear use.** These include:
 - Nuclear material;
 - Nuclear reactors and equipment therefore;
 - Non-nuclear material for reactors;
 - Plant and equipment for the reprocessing, enrichment, and conversion of nuclear material and for fuel fabrication and heavy water production; and
 - Technology associated with each of the above items.
 - The **second set of NSG Guidelines governs the export of nuclear-related dual-use items and technologies (items that have both nuclear and nonnuclear applications)**, which could make a significant contribution to an unsafeguarded nuclear fuel cycle or nuclear explosive activity.

- The NSG Guidelines are consistent with, and complement, the various **international, legally binding instruments in the field of nuclear nonproliferation.**
 - These include the NPT, and the Treaty for the Prohibition of Nuclear Weapons in Latin America (Treaty of Tlatelolco), the South Pacific Nuclear Weapons-Free Zone Treaty (Treaty of Rarotonga), the African Nuclear Weapons-Free Zone Treaty (Treaty of Pelindaba) and the Treaty on the Southeast Asia Nuclear-Weapons Free Zone (Treaty of Bangkok).
- The **NSG Guidelines aim to ensure that nuclear trade for peaceful purposes does not contribute to the proliferation of nuclear weapons or other nuclear explosive devices, while not hindering international trade and cooperation in the nuclear field.**
- The NSG guidelines facilitate the development of peaceful nuclear trade by providing the means whereby obligations to facilitate peaceful nuclear cooperation can be implemented in a manner consistent with international nuclear nonproliferation norms.
- NSG members commit themselves to conditions of supply, in the context of the further development of the applications of nuclear energy for peaceful purposes.
- **Safeguards**
- The **NSG aims to ensure that nuclear exports are carried out with appropriate safeguards, physical protection, and non-proliferation conditions, and other appropriate restraints.**
- The NSG also seeks to **restrict the export of sensitive items that can contribute to the proliferation of nuclear weapons.**
- **Dual-use Controls**
- At the beginning of the 1990's, it became apparent that export control provisions then in force had not prevented Iraq, a party to the NPT, from pursuing a clandestine nuclear weapons program, which later prompted UN Security Council action. A large part of Iraq's effort had been to acquire dual-use items not covered by the Guidelines and then to build

materials within Iraq needed for a nuclear weapons program. Iraq's program gave substantial impetus to the NSG's development of its dual-use Guidelines. In doing so, the NSG demonstrated its commitment to nuclear non-proliferation by ensuring that items like those used by Iraq would only be used for peaceful purposes. These items would remain available for peaceful nuclear activities subject to IAEA safeguards, as well as for other industrial activities that would not contribute to nuclear proliferation.

- **Following these developments, the NSG decided in 1992 to establish Guidelines for transfers of nuclear-related dual-use equipment, material, and technology** (items that have both nuclear and nonnuclear applications), which could make a significant contribution to an unsafeguarded nuclear fuel cycle or nuclear explosive activity.
- NSG was formed with the objective of averting the proliferation of nuclear weapons and preventing acts of nuclear terrorism.
- **Non-Proliferation Treaty (NPT)**
- **Non-Proliferation Treaty is an international treaty, which came into force in 1970.**
- The **main objective was to prevent the spread of nuclear weapons and weapons technology.**
- **Apart from India, Pakistan and Israel have also not signed NPT. India refused to sign NPT because:**
 - The **NPT defines 'nuclear weapons states' as those that tested devices before 1967, which means India cannot ever be one.**
 - **No fixed timelines have been mentioned for disarmament.**
 - **NPT is unfair treaty as nuclear weapon states have no obligation to give them up** while non-nuclear states are not allowed to have them.
- **India conducted its first Nuclear test Pokhran-I (Smiling Buddha), in 1974.** The nuclear powers were convinced that the Nuclear Non-

Proliferation Treaty (NPT) alone would not halt the spread of nuclear weapons. **Consequently, NSG was formed in 1974.**

- **NPT and NSG**
- The **current guidelines of NSG state that a non-NPT state cannot become a member of NSG which keeps**
- **India out of the group. In 1998 India conducted the second nuclear Test (Operation Shakti).**
- India is committed to voluntary, unilateral moratorium on nuclear testing. It has taken voluntary measures to ensure strong nuclear export control. However, new sanctions were imposed on India by Western Countries, especially US.
- In the pre-2005 period, the NSG denied fuel for the Tarapur Atomic Power station, while the US used MTCR (Missile Technology Control Regime) provisions to prevent the transfer of cryogenic engine technology from Russia.
- India finally managed to have some relief when the US relented and agreed to a civil nuclear deal with India in 2008. This agreement has been done in view of the requirement for the US under Section 123 of its Atomic Energy Act 1954, hence also known as 123 Agreement.
- Under this, India signed a civil-military separation plan and India-IAEA safeguard agreement. In return, US diplomacy helped us to get NSG waiver.
- During a state visit to India in November 2010, U.S. President Barack Obama announced U.S. support for India's participation in the Nuclear Suppliers Group, the Wassenaar Arrangement, the Australia Group and the Missile Technology Control Regime , "in a phased manner ," and to encourage the evolution of regime participation criteria to that end, "consistent with maintaining the core principles of these regimes".
- India has taken a formal pledge stating that it would not share sensitive nuclear technology or material with others and would uphold its voluntary moratorium on testing nuclear weapons.

- As a result, the NSG participating governments agreed to grant India a 'clean waiver' from its existing rules, which forbid nuclear trade with a country which has not signed the Nuclear Non-Proliferation Treaty (NPT).
- This made India eligible to receive advanced nuclear technologies that could be used to enrich uranium and reprocess plutonium. This has helped India a lot.
- However, being out of the elite NSG group has kept India still out of latest technologies as it is the NSG members that have the latest and the most efficient technology. In 2016, India applied for NSG membership. Pakistan and Namibia followed the suit.
- **China's Opposition**
- While a majority of the 48-member group backed India's membership, China along with New Zealand, Ireland, Turkey, South Africa and Austria were opposed to India's admission.
- China insisted that India should sign NPT for NSG membership. It wants a non-discriminatory criterion for the admission of countries who have not signed NPT. It is an open secret that China's resistance is to facilitate the entry of Pakistan, a close ally of China.
- But Pakistan's credentials for NSG membership are highly flawed and inadequate. On the other hand, over the years India has shown adherence to IAEA safeguards and has taken voluntary measures to abide by NPT and NSG guidelines while Pakistan has not taken any such initiatives.
- **Significance of NSG Membership for India**
- Membership to the NSG will essentially increase India's access to state-of-the-art technology from the other members of the Group.
- Access to technology and being allowed to produce nuclear equipment will give a boost to the Make in India program. That will, in turn, boost the economic growth of our country.
- As per India's Intended Nationally Determined Contributions (INDC) under the Paris Climate agreement, we have committed to reducing

dependence on fossil fuels and ensuring that 40% of its energy is sourced from renewable and clean sources. In order to achieve this target, we need to scale up nuclear power production. This can only happen if India gains access to the NSG.

- Namibia is the fourth-largest producer of uranium and it agreed to sell the nuclear fuel to India in 2009. However, that hasn't happened as Namibia has signed Pelindaba Treaty which essentially controls the supply of uranium from Africa to the rest of the world. If India joins the NSG, such reservations from Namibia are expected to melt away.
- **Factors in Favour of India's Membership**
- France got membership in the elite group without signing the NPT.
 - **Commitment to Non-proliferation:** India's commitment to bifurcate its civilian and military nuclear programs along with its non-proliferation record ensured indigenously developed technology is not shared with other countries.
 - **Transparency:** India has also ratified an Additional Protocol with the International Atomic Energy Agency (IAEA) which means that its civilian reactors are under IAEA safeguards and open for inspections.
- **Missile Technology Control Regime (MTCR)**
- It is an informal and voluntary partnership among 35 countries **to prevent the proliferation of missile and unmanned aerial vehicle technology capable of carrying greater than 500 kg payload for more than 300 km**, as well as systems intended for the delivery of weapons of mass destruction (WMD)
 - The members are thus prohibited from supplying such missiles and UAV systems that are controlled by the MTCR to non-members.
 - **The decisions are taken by consensus of all the members.**
- This is a **non-treaty association of member countries** with certain guidelines about the information sharing, national control laws and export policies for missile systems and a rule-based regulation

mechanism to limit the transfer of such critical technologies of these missile systems.

- **It was established in April 1987 by G-7 countries** – USA, UK, France, Germany, Canada, Italy, and Japan.
- In 1992, the focus of the regime extended to on the proliferation of missiles for the delivery of all types of weapons of mass destruction (WMD), i.e., nuclear, chemical and biological weapons.
- **It is not a legally-binding treaty.** Hence, no punitive measures could be taken against non-compliance to the guidelines of the regime.
- These efforts of non-proliferation of ballistic missile systems had further been strengthened by **“The International Code of Conduct against Ballistic Missile Proliferation”**, also known as the **Hague Code of Conduct (HCOG)**, which was established on 25 November 2002 as an arrangement to prevent the proliferation of ballistic missiles with 136 UN member countries including India.
- **India was inducted into the Missile Technology Control Regime in 2016 as the 35th member.**
 - India has joined MTCR as a full member and also agreed to join the Hague Code of conduct which **bolstered its position as a responsible nuclear state** and strengthen its case for the **membership of Nuclear Suppliers Group.**
 - India can procure **high-end missile technology and run joint programmes for development of unmanned aerial vehicles with other countries.** eg. Procurement of theater missile interceptor “Arrow II ” from Israel, military drones like “Avenger” from the USA etc.
 - India being a member of the regime will have some obligations like sharing critical information about its military and technological assets, consulting other member countries regarding the export of any MTCR items, especially those notified or denied by another partner.

- **China is not a member of this regime** but it had verbally pledged to adhere to its original guidelines but not to the subsequent additions.
- **India and MTCR**
- India formally applied for membership to the group in June 2015 and **got it on 27 June 2016**.
- **India will gain a lot from entry in to the MTCR club.**
 - **Technology Transfers:** It will get access to the latest state of the art technologies. India can now build missile systems capable of carrying a 500 kilogram payload at least 300 kilometers and even take assistance from other MTCR members like India did in increasing the range of Brahmos with the help of Russia.
 - **Economic Benefits:** India can transfer technology and missiles to non-MTCR members. This has led to trade talks for Brahmos between India and Vietnam.
 - **Strategic Advantages:** This has led India to strengthen its position against China in the region. With MTCR in its kitty, India can now target whole of China and Pakistan through its missiles. This will create strategic deterrence against China and Pakistan.
- **Wassenaar Arrangement (WA)**
- The **Wassenaar Arrangement (WA) 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, thus preventing destabilizing accumulations.
- The **aim is also to prevent the acquisition of these items by terrorists**. It is the **successor to Coordinating Committee for Multilateral Export Controls (COCOM) from the Cold War era, and was established on 12 July 1996**.
- The Arrangement is based on **five crucial principles**:
 - It contributes to regional and international security and stability.
 - It promotes transparency and greater responsibility in transfers of conventional arms and dual-use goods and technologies.

- It complements and reinforces the export control regimes for weapons of mass destruction and their delivery systems.
- It is not directed against any state or group of states.
- It uses export controls as a means to combat terrorism.
- Wassenaar Arrangement's Secretariat is in **Vienna, Austria.**
- **It has 42 member states comprising mostly NATO and EU states.**
 - Participating States seek, through their national policies, to ensure that transfers of these items do not contribute to the development or enhancement of military capabilities which undermine these goals, and are not diverted to support such capabilities. **The aim is also to prevent the acquisition of these items by terrorists.**
 - Participating States are required to report their arms transfers and transfers/denials of certain dual-use goods and technologies to destinations outside the Arrangement on a **six-monthly basis.**
- The **Wassenaar Arrangement has control lists that document the dual-use goods and technologies.** These lists are updated regularly.
- The Wassenaar Arrangement Plenary is the decision-making body of the Arrangement.
 - It is composed of representatives of all Participating States and normally meets once a year, usually in December.
 - The position of Plenary Chair is subject to annual rotation among Participating States.
 - In 2018 the Plenary Chair was held by the United Kingdom, and in 2019 the Chair is held by Greece.
 - **All Plenary decisions are taken by consensus.**
- **India was inducted to the Wassenaar Arrangement on 7 December, 2017 as the 42nd member.**
 - **India joining the Wassenaar Arrangement** implies that India is also recognised to have dual use technology. There is an exchange of notes when countries meet in such arrangements.

So, India will gain access to high technology which will **help to address the demands of its defence & space sectors.**

- **Australia Group**
- Australia group is an **informal group that seeks to ensure that exports do not contribute to the development of chemical or biological weapons** through the harmonization of export controls.
- The **formation of the Australia Group (AG) in 1985** was prompted by Iraq's use of chemical weapons during the Iran-Iraq War (1980-1988)
- Australia Group participants need to fulfill their obligations under the **Chemical Weapons Convention** and the **Biological and Toxin Weapons Convention** to the fullest extent possible.
- It has **43 members including the European Commission. India became its 43rd member in January 2018.**
 - The Australia Group decided to admit India as the Group's 43rd Participant through a consensus decision.
 - India's entry into the Group would be mutually beneficial and further contribute to international security and non-proliferation objectives.
 - The entry was expected to strengthen India's concerted bid for membership of Nuclear Supplier Group.
- **Australia group maintains export controls on a uniform list of 54 compounds** that can be used in the manufacture of chemical weapons.
- **Advantages of Membership**
- Advantages that may come with the membership of Wassenaar arrangement and the Australia Group are as under:
- **Technology Transfers**
- It will get access to the latest state of the art technologies.
- India can innovate and build upon the technologies provided.
- India can develop more advanced weapons for commercial use.
- **Economic Benefits**
- India can transfer technology and weapons to non member nations.

- India can develop industries for the same in India boosting economy and provide with job creation.
- **Strategic Advantages**
- This will create strategic deterrence against China and Pakistan.
- It will help in making India as a Defence and technology partner to nations.
- Will act as a boost to India's membership in NSG.
- **Benefits to India by becoming a member of a Multilateral export control regime:**
- The membership of a multilateral export control regime is beneficial for India due to the following reasons:
- It would open the way for India to buy **high-end missile technology** from member nations for use in peaceful purposes like its **space programme** under the MTCR.
- India can export the most **advanced UAVs for use in security and counter-terrorism purposes** under the MTCR for example, the Predator drone from the USA.
- The **range of the Brahmos missile can be extended** beyond the 300km that it has been limited to under the MTCR.
- India will be a **part of the rule-making system** and will not only adhere to the rules but have a say in their formulation.
- It will allow India to **ensure that the waiver due to the Indo-US 123 Agreement (Civil nuclear agreement)** stays and is not modified. This can only be done if India becomes a member of the NSG.
- The membership of the MECRs also shows that India is a mature and responsible nation and strengthens its bid for other major reforms in the international order like **reform of the UNSC**.
- The fact that India was made a member of the Wassenaar Arrangement even though it is not a signatory to the Nuclear NPT shows the strict adherence to non-proliferation that India has maintained.
- It would allow **access to dual-use goods and technologies** under the Wassenaar Arrangement.

	<ul style="list-style-type: none">• It gives strategic significance to India's stance as now India is a member of three of the four MECRs where China is not a member. This will allow India a better bargaining chip in its quest to gain a position in the NSG.• Multilateral export control regimes today form significant decision making bodies in the global rules-based order. Membership to these not only allows greater technology and material access but enhances the credibility of a nation as a responsible member of the world order. India is poised to become a significant player in the world and thus requires a voice in these MECRs to further its claim as a rising power.
<p>2. Dhole</p>	<ul style="list-style-type: none">• The Dhole, also known as the Asiatic Wild Dog, is a creature of interest, often featured in the news due to its unique characteristics and conservation status. This species is primarily found in various regions across India. In this article, we will explore the intricate details about Dholes, including their habitat, IUCN status, and other fascinating facts.• The Dhole is a type of canid species that inhabits eleven different Asian countries.• Dholes are scientifically known as <i>Cuon alpinus</i>.• They are also referred to as the Asiatic wild dog, Asian Wild Dog, Indian wild dog, whistling dog, and red dog.• The Conservation Status of Dholes:<ul style="list-style-type: none">• They are classified as Endangered on the IUCN Red List.• Dhole is a Schedule II species under the Wildlife (Protection) Act, 1972.• They are listed under Appendix II of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES).• Dholes are social animals that typically live in clans of twelve.

- In India, Dholes are found in three distinct clusters:
 - Western and Eastern Ghats
 - North East India
 - Central Indian Landscape
- **Characteristics of Dholes**
 - Dholes possess physical traits that are a mix of the grey wolf and the red fox, with a long backbone and slender limbs akin to a cat.
 - They have a broad and heavy head, which gives them a resemblance to hyenas.
 - Adult females weigh between 10 to 17 kg, while adult males weigh between 15 to 21 kg.
 - The general color of their fur is reddish, which is most vibrant during the winter season.
 - The throat, chest, flanks, and belly, along with the upper parts of the limbs, have a slightly yellowish tone.
 - Their tail is fluffy with a brown tip.
 - Dholes are known to produce a whistling sound, earning them the nickname "whistling dogs." They can also make a variety of other sounds, including whining, chattering, growling, and screaming. However, unlike wolves, Dholes do not bark or howl.
 - Dholes live in clans of 5 to 12 individuals, referred to as packs. However, larger clans of up to 40 individuals have been reported in some regions.
 - They are more social compared to wolves and rarely engage in intragroup fighting. Interestingly, they do not mark their territory like other canids.

- Dhole clans can contain more than one breeding female, which is unlike wolf clans. Furthermore, more than one female can den and rear their litters together in the same den.
- The gestation period for Dholes is around 60 to 63 days, with litters averaging four to six pups. The litters stay at the den site for approximately 70 to 80 days.
- Dholes are diurnal hunters, preferring to hunt during the early morning hours.
- They are tolerant of scavengers near their kill. Other pack members provide regurgitated food for the mother and children.
- Dholes in India prey on animals like Sambar deer, Chital, Wild Boar, Water Buffaloes, Cattle, Goats, and Monkeys.
- Dholes do not pose a threat to humans and have a varied diet that includes lizards and insects. They can also consume fruits and vegetables.
- Dholes share their diet with Tigers and Leopards. However, they avoid competition through selective prey choices.
- It is important to note that Dhole packs are smaller in areas with higher tiger densities, as tigers can kill Dholes with a single paw strike.
- Dholes can be affected by various diseases, including rabies and canine distemper.
- **Dhole Distribution and Habitat**
- Dholes are found in several countries, including Pakistan, Tibet, and North Korea, in addition to India.
- In Central Asia, they inhabit mountainous regions.
- In countries like China, India, Indonesia, and Myanmar, Dholes inhabit forested areas in alpine zones, rarely venturing into plain regions.

	<ul style="list-style-type: none">• In India, they are specifically found in the Central Indian Highlands and Western and Eastern Ghats.• They are also found in countries like Kyrgyzstan, Russia, Bhutan, Bangladesh, Malaysia, Vietnam, and Thailand.• Threats to Dholes:• In the past, Dholes were killed in India to protect livestock. However, they are now protected under the Wildlife Protection Act 1972.• Despite this protection, Dholes continue to face persecution in certain regions of India through hunting, poisoning, and snaring.• Dhole Conservation:• Dholes are protected under Schedule II of the Wildlife Protection Act, 1972.• The first Dhole conservation breeding center is located at the Indira Gandhi Zoological Park, Visakhapatnam, which was sanctioned in 2014.• Dholes in Indian Culture:• The coping stone of the Bharhut Stupa, which dates back to 100 BC, depicts three Dhole-like creatures waiting by a tree with a woman or spirit.
<p>3.</p>	<p>Women Reservation Act, 2023</p> <ul style="list-style-type: none">• The Constitution (106th Amendment) Act, 2023, reserves one-third of all seats for women in Lok Sabha, State legislative assemblies, and the Legislative Assembly of the National Capital Territory of Delhi, including those reserved for SCs and STs.• The reservation will be effective after the publication of the census conducted following the Act's commencement and endures for a 15-year period, with potential extension determined by parliamentary action.

- The rotation of seats allocated for women will be governed by parliamentary legislation after each **delimitation process**.
 - Currently, around **15%** of the total members of the 17th Lok Sabha (**2019-2024**) are women while in state legislative assemblies, women on average constitute **9%** of the total members.
- **Legislative Progression of Women's Reservation Bills:**
 - The **Convention on the Elimination of All Forms of Discrimination Against Women, 1979** mandates the **eradication of gender-based discrimination in political and public spheres**, with **India** being a signatory.
 - Despite progress, the representation of women in decision-making bodies remains relatively low, **increasing from 5% in the first Lok Sabha to 15% in the 17th Lok Sabha**.
 - Constitutional amendments aimed at reserving seats for women in Parliament and state legislative assemblies were proposed in **1996, 1998, 1999, and 2008**.
 - The **first three Bills** (1996, 1998, 1999) **expired** when their **respective Lok Sabhas dissolved**.
 - The **2008 Bill** was introduced in and **approved by the Rajya Sabha** but also **lapsed when the 15th Lok Sabha dissolved**.
 - However, in the present case, it will require adherence to the **“Triple Test”** laid down by the **Supreme Court**.
 - The 1996 Bill underwent examination by a **Joint Committee of Parliament**, while the 2008 Bill was scrutinized by the **Standing Committee on Personnel, Public Grievances, Law, and Justice**.
 - Both committees endorsed the idea of seat reservations for women. Some of their recommendations included:

- considering reservations for women **from other backward classes OBCs**) at an appropriate time
- implementing **reservations for a 15-year** period with subsequent reviews
- devising a plan for **reserving seats for women in the Rajya Sabha and state legislative councils.**
- **Issue of Triple Test:**
- Government sources said that **reservations for women would require clearing the "triple test"**.
- In 2010, the Supreme Court held that **backwardness with relation to local bodies has to be "political"** –such as underrepresentation in politics. It may differ from “social and educational backwardness”, which is used to grant reservations for seats in educational institutions or government jobs.
- The **Supreme Court, while deciding on the legality of OBC reservations in Maharashtra local body elections, in a verdict in 2021, had set out a three-fold test** that state governments have to follow to provide these reservations.
 - First, the **state was mandated to set up a dedicated commission** to examine backwardness in local bodies within the state.
 - Second, **states were required to determine the size of the quota** based on the commission survey data.
 - Third, **these reservations, combined with Scheduled Castes and Scheduled Tribes quotas, could not be more than 50%** of the total seats in the local body.
- In 2022 and 2023, the **Supreme Court continued to make it mandatory for states to implement the triple test before the OBC reservation** in Local Body elections.
 - However, **such a "triple test" is not applied to political reservations for SC/STs**, since the reservation in elections applies under Article 334.

- The **“triple test” for representation of SC/STs “only applies in the case of quota for promotions in government employment.”**

- **Different Committees and Their Reports on the Issue**

- **1971 Committee on the Status of Women in India (CSWI):**

- It was **created in response to a request from the UN for a report on the status of women** ahead of International Women’s Year, 1975.
- Set up by the erstwhile Ministry of Education and Social Welfare.
- It examined the constitutional, administrative, and legal provisions that have a bearing on the social status of women, their education, and employment — and the impact of these provisions.
- It published the report -**‘Towards Equality’** as per which, the Indian state had failed in its constitutional responsibility to ensure gender equality.
 - Following this, several states began announcing reservations for women in local bodies.
 - **1987 Committee under Margaret Alva**
 - In 1987, the government constituted a 14-member committee under then Union Minister Margaret Alva.
 - In 1988, the committee presented the **National Perspective Plan for Women 1988-2000** to the Prime Minister.

- Among the committee's 353 recommendations was the reservation of seats for women in elected bodies.

▪ **Consequence**

- In 1992, the **73rd and 74th Constitutional Amendment Acts** were introduced under the Prime Ministership of **P V Narasimha Rao**.
- It was the doing of the **National Perspective Plan for Women** that mandated the reservation of **1/3rd of seats for women (via 73rd and 74th Amendments) in Panchayati Raj institutions** (PRIs) and offices of the chairperson at all levels of PRIs, and in urban local bodies respectively.
 - Many States such as **Maharashtra, Andhra Pradesh, Bihar, Chhattisgarh, Jharkhand and Kerala** have made legal provisions to ensure 50% reservation for women in local bodies.
- **First Women's Reservation Bill**
- On September 12, 1996, the Government of India tabled **81st Constitutional Amendment Bill** which sought to reserve 1/3rd of seats for women in Parliament and state legislatures.
 - However, many **MPs, especially those belonging to the OBCs, opposed the Bill**.
 - Consequently, the bill was sent to a Select Committee of Parliament headed by **Geeta Mukherjee**.
- **Geeta Mukherjee Committee 1996:**
 - **The** Committee had 21 members from LS and 10 from RS.

- The panel noted that seats for women had been reserved within the SC/ST quotas, but there was **no such benefit for OBC women** because there is no provision for OBC reservation.
- It recommended that the government “may consider...extending...reservation to OBCs also at the appropriate time so that the women belonging to OBCs will also get the benefit of reservation”.

- **2013 Committee on the Status of Women:**

- In 2013, the **Ministry of Women and Child Development** constituted a **committee on the status of women**, which recommended ensuring at least **50% reservation of seats for women in the Local bodies**, State Legislative Assemblies, Parliament, Ministerial levels and all decision-making bodies of the government.

- As per the **World Economic Forum (WEF)'s Global Gender Gap Report 2023**, India has made strides in political empowerment, achieving **3% parity in this domain**.
- Women represent **1% of parliamentarians**, which is the highest representation since the inaugural report in 2006.

- **Status of Women's Reservation in Panchayats and ULBs**

- **Women's Reservation - Initiatives and Current Data**

- **Early Initiatives:**
 - In 1985, the state government of **Karnataka implemented 25% reservation for women** in Mandal Praja Parishads with a sub-quota for scheduled caste and scheduled tribe women, **becoming the first state to do so**.
 - In 1987, the **erstwhile united Andhra Pradesh implemented 9% reservation** for women in gram panchayats.

- In 1991, **Odisha affected 33% reservation** for women in Panchayats.
 - The 1992 Constitutional amendment made this quota national, and inserted a 33% sub-quota for scheduled caste and scheduled tribe women.
- **73th and 74th Amendments:**
 - In 1992, following the recommendations of the **National Perspective Plan for Women 1988-2000**, the 73rd and 74th Amendment Acts (1992) mandated the reservation of **1/3rd of seats for women in Panchayati Raj institutions (PRIs) and in urban local bodies.**
 - 'Panchayat', being "Local government", is a **State subject and part of the State list of the Seventh Schedule** of the Constitution of India.
 - **Article 243D** of the Constitution ensures participation of women in PRIs by mandating at least 1/3rd reservation for women out of total number of seats to be filled by direct election and number of offices of chairpersons of Panchayats.
- Status In Different States
- **States with >50% Reservation:**
 - According to government data, as of Sept 2021, in at least 18 states, the **percentage of women elected representatives in PRIs was more than 50%:**
 - Uttarakhand, Chhattisgarh, Assam, Maharashtra, Tamil Nadu, Odisha, Kerala, Bihar, Jharkhand, West Bengal, Rajasthan, Manipur, Telangana, Sikkim, Himachal

Pradesh, Karnataka, Andhra Pradesh, and Madhya Pradesh.

- These 18 states, including Gujarat and Kerala have also made legal provisions for 50% reservation for women in PRIs.
- Highest proportion of women representatives in PRIs - **Uttarakhand**(56.02%)
 - Lowest - **Uttar Pradesh**(33.34%)
 - Overall percentage in India - 45.61%
- **Bihar was the first one** to increase the reservation percentage to 50% (in Panchayats and ULBs) in 2006 **followed by Sikkim the next year.**
- **The Nagaland Controversy:**
 - In April 2023, **Nagaland** was amid controversies regarding the **reservation of seats for women in urban local body (ULB) polls.**
 - The issue centers around the Nagaland Municipal Act of 2001, which mandated a 33% reservation for women in ULB polls (as per 74th amendment).
 - Many traditional tribal and urban organizations opposed it, arguing that it would violate the special provisions granted by Article 371A.
 - Their apex tribal body argues that **women have traditionally not been part of decision-making bodies.**
 - **Nagaland is the only state where ULB seats are not reserved for women.**
- **Status of Women's Reservation in Services in Different States**
- **Women's Reservation and Horizontal Reservation:**

- The **Constitution of India does not expressly permit reservation for women** in public employment. On the contrary, **Article 16(2)** prohibits discrimination in public employment on the ground of sex.
- Therefore, women can, at best, be provided only horizontal and not vertical reservation on the basis of the Supreme Court's pronouncement in the famous **Indra Sawhney's case (1992)**.
- **Horizontal Reservation** refers to the equal opportunity provided to categories of **beneficiaries such as women, veterans, the transgender community, and individuals with disabilities**, cutting through the vertical categories.
 - The horizontal quota is applied separately to each vertical category, and not across the board.
 - For example, if women have **50% horizontal quota**, then **half of the selected candidates will have to necessarily be women in each vertical quota category**., half of all selected Scheduled Caste candidates will have to be women, half of the unreserved or general category will have to be women, and so on.
 - **The Scenario of Women's Job Quota in Different States:**
 - **Uttarakhand:**
 - In 2006, Uttarakhand state government issued an order ensuring **30% horizontal reservation for women candidates** in the state. This reservation was for public employment **exclusively to state-domiciled women**.
 - In August 2022, the High Court of Uttarakhand stayed this order. However, in

Nov 2022, the **Supreme Court allowed the government** to continue with its 16-year-old decision and stayed a HC order that had opened up the quota for women from anywhere in India.

- In January 2023, the **government again came out with an ordinance** to continue with the provisions of the reservation.

- **Karnataka:**

- In 2022, the Karnataka government reserved **33% for outsourced women employees in all the departments.**
- As per the circular, the state government recruits data entry operators, housekeeping staff and other group D employees, drivers through outsourcing.
- The 33% reservation is applicable for **all autonomous bodies, universities, urban local bodies, and other government offices.**

- **Tripura:**

- In 2022, on the occasion of Women's Day, Tripura govt has announced its decision to give a reservation of **33% to all women for any state govt job, or for higher educational institutions.**

- **Punjab:**

- In 2020, the **Punjab state govt approved 33% reservation for women in direct recruitment for the Punjab Civil Services,** boards and corporations.

- The "Punjab Civil Services (Reservation of Posts for Women) Rules, 2020" provided such reservation for women for direct recruitment to posts in government, as well as in recruitment to Boards and Corporations in **Group A, B, C, and D posts.**

- **Bihar:**

- In 2016, the state cabinet granted **35% reservation to women in all government jobs.**
- Earlier, the state govt also made a provision for a reservation of **35% for women in the recruitment of police constabulary in the state.**

- **Representation of Women in Other Sectors**

- **Governance:**

- India has had **one woman prime minister and two female presidents** since independence in 1947.
- **Fifteen women have served as chief ministers** so far.

- **Judiciary:**

- **India's Supreme Court has not had a single female chief justice so far.**
- As of August 2023, there were three women judges in the apex court of a sanctioned strength of 34, 106 women judges out of 788 in the 25 high courts and 7,199 in the lower courts.
- **Justice BV Nagarathna** is in line to become the first woman Chief Justice of India in 2027.

- **Defence And Police:**

- As of March 2023, there were **6,993 women officers in the Indian army**, 748 in the navy. The strength of women officers in the Indian Air Force stood at 1,636, excluding medical staff.

- Women constitute 11.7% of the 2.1 million-strong police force.
- **Aviation:**
 - India has the **highest proportion of female pilots to males in the world**, making up 15% out of a total of about 10,000 pilots in the South Asian country, against 5% globally.
- **Agriculture:**
 - With 62.9% female participation, **agriculture has the highest percentage of women workers**, followed by manufacturing, at 11.2% in 2022.
 - Millions of Indian women are employed in unorganised sectors such as domestic and daily wage labourers.
- **Corporate:**
 - **Women accounted for 18.2% of board seats at NIFTY 500 companies in 2023**, with the life sciences sector reporting the highest female representation on boards at 24%.
 - The **tech industry has a high representation of women in the workforce at 34% but lags behind other industries** when it comes to women in executive positions. There are 8.9% of firms with women in top managerial posts.
- **Issues Related to Delimitation**
- **Will come into effect after the Delimitation:**
 - The reservation shall come into effect only after delimitation is undertaken and delimitation will be undertaken only after the relevant figures of the next census are published.
 - The 2021 Census that was postponed because of the Covid pandemic and several other reasons has been **further pushed to 2024-25 until further orders**.
 - The Union Home Minister explained that **the decision to implement reservation after delimitation is to ensure that a quasi-judicial body like the Delimitation**

Commission can decide which seats to reserve, after public consultation.

- The Law Minister claimed that it was **against the provisions of the Constitution to provide reservation immediately**, noting that someone may challenge it in a court of law. And the government will not allow the Act to get stuck in some technicality.

- **Present Issues With Delimitation:**

- According to rough estimates, the country's population has increased by about 30 percent since the last census in 2011. **Therefore, the seats in the Lok Sabha will also increase in the same proportion.**
- It is expected that there will be an increase of about 210 seats over the 543 seats in the current Lok Sabha. That means the total seats would likely be around 753.

- Previous Delimitation Exercises
- The Delimitation Commission of 2022 had taken about five years to complete the exercise, based on the 2001 Census report.
 - Election Commission also said that delimitation exercises undertaken in the years **1952, 1963, 1973, and 2002** have not considered the exact number of women in a constituency.
- Even after the 2001 census, the **delimitation exercise for Assam, Arunachal Pradesh, Nagaland, and Manipur was left out by the 2002 Commission.**
- The **delimitation exercise for the newly formulated Union territory of Jammu and Kashmir** went on for over two years between March 2020 to May 2022.
- In **Assam**, it was started by the Election Commission in 2022, and the final draft was published in August 2023. The process, however, has been challenged before the Supreme Court.

- As for Arunachal Pradesh and Nagaland, the **Supreme Court was informed recently by the central government** that it is "considering" setting up a delimitation commission for the two states, while delimitation in Manipur would be delayed.

- **OBC Issue**
- **Unlike SCs and STs**, the Constitution does not provide for political reservation for Other Backward Classes (OBCs) in the Lok Sabha or state assemblies.
- **OBC Issue with the Act:** The women's reservation Act, which reserves 33% of seats for women in the Lok Sabha and state assemblies, **does not include a quota for women from the OBCs.**
 - OBCs who constitute **41% of the population (as per the 2011 census) are inadequately represented in the Lok Sabha, State Legislatures and Local governments.**
 - They have been **demanding a separate quota for themselves in the Lok Sabha and state assemblies**, similar to the reservation for SCs and STs.
 - However, the **government has not implemented such a quota**, citing legal and constitutional hurdles.
 - Several State Governments like **Uttar Pradesh and Maharashtra have provided them representation in Local Body elections.**
 - But the Supreme Court has put **acap of 50% on the overall reservations (Vikas Kishanrao Gawali vs State of Maharashtra) which limits OBC reservation to 27%.**
 - This 50% upper limit is in the lines with the **Indira Sawhney vs Union of India judgment.**

- **Strength of OBCs in Lok Sabha:** The 17th Lok Sabha has **around 120** MPs from the OBC community. Which **accounts for approximately 22% of the total Strength** of Lok Sabha

- The Constitution (Amendment) Bill, 2018 (insertion of new articles **330A and 332A**) **proposes to ensure a proportionate representation to OBC in representative bodies**-- House of the People and the Legislative Assemblies of the State.

- Should There be an OBC Women Reservation Under the 33% Reservation?

Arguments in favor

- OBC women **face multiple forms of discrimination and oppression** based on their caste, class and gender. They are often denied access to education, health, employment, political representation and social justice.
- OBC women constitute a large and diverse section of the population, with different cultures, languages, religions and regions. They have **different needs and aspirations that may not be adequately**

Arguments against

- The **Act already provides for the reservation of seats for SC/ST women**, who are the most disadvantaged and vulnerable groups in the society.
- **Adding another quota for OBC women would reduce the seats available for the general category of women, who also face discrimination and challenges** in the male-dominated political system.

represented by women from other categories.

- OBC women have been **historically underrepresented and marginalized in the political sphere**, both at the national and state levels. They have **faced barriers such as patriarchal norms, caste prejudices, violence and intimidation**, lack of resources and awareness, and low self-confidence.

- The idea of having a **separate reservation for OBC women would create further divisions and conflicts** among the women's movement. It would also undermine the solidarity and unity of women as a collective force for social change.
- Separate reservation for OBC women **would not address the root causes of their problems**, such as poverty, illiteracy, violence, patriarchy, casteism and corruption.
- It would also **not guarantee their effective participation and representation in the political arena, as they may still face obstacles such as tokenism, co-option, manipulation and domination** by the male leaders of their parties and communities.

Different Constitutional Provisions Related to Women's Reservation

- **Reservation for Women in Lower House:** The Act provides for **inserting Article 330A** to the constitution, which borrows from the

provisions of Article 330, which provides for reservation of seats to SCs/STs in the Lok Sabha.

- The Act provides that reserved seats for women **may be allotted by rotation** to different constituencies in states or Union Territories.
- In the seats reserved for SCs/STs, the **Act seeks to provide one-third of the seats to be reserved for women** on rotational basis.
- **Reservation for Women in State Legislative Assemblies:**The Act **introduces Article 332A**, which mandates the reservation of seats for women in every state Legislative Assembly. **Additionally, one-third of the seats reserved for SCs and STs must be allocated for women, and one-third of the total seats filled through direct elections to the Legislative Assemblies shall also be reserved for women.**
- **Reservation for Women in NCT of Delhi (New clause in 239AA):** Article 239AA to the constitution grants special status to the Union Territory of Delhi as national capital with regards to its administrative and legislative functioning.
 - **Article 239AA(2)(b)** was **amended by the Act accordingly** to add that the laws framed by parliament shall apply to the National Capital territory of Delhi.
- **Commencement of Reservation (New article - 334A):** The reservation will be effective **after the census conducted** after the commencement of this Act has been published. Based on the census, **delimitation will be undertaken** to reserve seats for women.
 - The reservation will be provided for **a period of 15 years**. However, it shall continue till such date as determined by a law made by Parliament.
- **Rotation of Seats:** Seats reserved for women **will be rotated after each delimitation**, as determined by a law made by Parliament.
- **Reservation for Women in Politics in India**

- The issue of reservation for women in politics can be traced back to the **Indian national movement**. In **1931**, in their letter to the British Prime Minister, submitting the official memorandum jointly issued on the status of women in the new Constitution by three women's bodies, leaders Begum Shah Nawaz and Sarojini Naidu.
- The **National Perspective Plan for Women** recommended in 1988 that reservation be provided to women right from the level of the panchayat to that of Parliament.
 - These recommendations paved the way for the historic enactment of the 73rd and 74th amendments to the Constitution which mandate all State governments to reserve one-third of the seats for women in Panchayati Raj Institutions and one-third of the offices of the chairperson at all levels of the Panchayati Raj Institutions, and in urban local bodies, respectively. Within these seats, one-third are reserved for Scheduled Caste/Scheduled Tribe women.
- The discussion upon the reservation of women reservation bill is prevalent since the **1996**. As the then Government lacked a majority, the Bill could not have been approved.
- **Earlier Attempts at Reserving Seats for Women:**
 - **1996:** First Women Reservation Bill was introduced in the Parliament.
 - **1998– 2003:** Government tabled the Bill on 4 occasions but failed.
 - **2009:** Government tables the bill amid protests.
 - **2010:** The Union Cabinet passes the Bill and RS passes it.
 - **2014:** The Bill was expected to be tabled in LS.
- The **National Policy for the Empowerment of Women (2001)** had stated that reservation will be considered in **higher legislative bodies**.
- In May 2013, the **Ministry of Women and Child Development** constituted a committee on the status of women, which recommended ensuring at least 50% reservation of seats for women in the Local bodies, State Legislative Assemblies, Parliament, Ministerial levels and all decision-making bodies of the government.

- In **2015, the Report on the Status of Women in India** noted that the representation of women in state assemblies and Parliament continues to be dismal. It recommended reserving at least 50% seats for women in local bodies, state legislative assemblies, Parliament, ministerial levels, and all decision-making bodies of the government.

Arguments in favour

- **Need:** There are 82 women Member of Parliaments in LS (15.2%) and 31 women in RS (13%). While the number has increased significantly since the 1st Lok Sabha (5%) but is still far lower than in many countries.
 - According to recent UN Women data, **Rwanda (61%), Cuba (53%), Nicaragua (52%)** are the top three countries in women representation. Bangladesh (21%) and Pakistan (20%) as well are ahead of India in case of female representation.
- **Gender Equality:**
 - Women representation in politics is a vital step towards gender equality. However, according to **Global Gender Gap Report 2022**, India ranks 48th out of 146 in Political Empowerment.
 - Notwithstanding its rank, its score is quite low at 0.267. Some of the best-ranking countries in this category score much better. For instance, Iceland is ranked 1 with a score of 0.874 and Bangladesh is ranked 9 with a score of 0.546.
- **Historical Underrepresentation:**
 - The number of women MPs has increased from 5% in the first Lok Sabha to 15% in the **17th Lok Sabha**; but the number continues to be quite low.
 - A 2003 study about the effect of reservation for women in panchayats showed that women elected under the reservation policy invest more in the public goods closely linked to women's concerns.

- The Standing Committee on Personnel, Public Grievances, Law and Justice (2009) had noted that reservation of seats for women in local bodies has enabled them to make meaningful contributions.

- **Women's right to Self-representation and Self-determination:**

- If a group is not represented proportionally in the political system, its ability to influence policy-making is limited. The **Convention on the Elimination of All Forms of Discrimination Against Women** provides that discrimination against women must be eliminated in political and public life.
- The various surveys do indicate that women representatives from Panchayati Raj have worked commendably in the development and overall well-being of society in villages and many of them would definitely want to work on the larger scale, however, they face various challenges in the political structure prevalent in society.

- **Diverse Perspectives:**

- A more diverse legislature that includes a significant number of women can bring a broader range of perspectives to the decision-making process. This diversity can lead to better policy formulation and governance.

- **Empowerment of Women:**

- Women's reservation in politics empowers women at various levels. It not only encourages more women to participate in politics but also inspires women to take on leadership roles in other sectors.

- **Promotion of Women's Issues:**

- Women in politics often prioritize and advocate for issues that directly affect women, such as gender-based violence, women's

health, education, and economic empowerment. Their presence can lead to the prioritization of these issues in policy discussions.

- **Role Models:**

- Women leaders in politics can serve as role models for young girls, encouraging them to aspire to leadership positions in various fields. Representation in politics can break stereotypes and inspire future generations.
- Indira Gandhi served as the first and only women Prime Minister of India from 1966 to 1977.
- Sushma Swaraj was the second woman external affairs minister of India after Indira Gandhi.

- **Arguments Against**

- Women are **not a homogeneous community like, say like, a caste group**. Therefore, the same arguments made for caste-based reservations cannot be made for women.
- Reserving seats for women is opposed by some who claim that **doing so violates the Constitution's guarantee of equality**. If there is a reserve, they claim, women won't be competing on merit, which could decrease their status in society.

- **Ensure Effective Representation of Women**

- **Strengthen Independent Decision Making:**

- Establish an independent monitoring system or committees that explicitly prohibits family members from influencing the decision making process of women representatives.
- It can be implemented by **reducing the influence of patriarchal mindset**.

- **Increasing Awareness and Education:**

- Creating awareness among women about their rights and the importance of their participation in politics is essential.

Educational programs and awareness campaigns can help to increase women's political participation.

- **Addressing Gender-based Violence and Harassment:**
 - **Gender-based violence** and harassment are major obstacles to women's participation in politics. Addressing these issues through policy and legal measures can create a safer and more supportive environment for women in politics.
- **Reforms in the Electoral Process:**
 - Reforms such as introducing **proportional representation** and preferential voting systems can help to increase women's representation in politics by ensuring that more women get elected.
 - These are only a few approaches to increase the number of women in Indian politics. To effect long-lasting change, a multifaceted strategy addressing multiple challenges is required.

4. Article 31 C

While hearing a case to decide whether the government can acquire and redistribute private property, a nine-judge Bench of the Supreme Court has chosen to address the question: does Article 31C still exist?

Article 31C:

- It protects laws **enacted to ensure the “material resources of the community” are distributed to serve the common good (Article 39(b)) and that wealth and the means of production are not “concentrated” to the “common detriment” (Article 39(c)).**
- As per Article 31C, **these directive principles (Articles 39(b) and 39(c)) cannot be challenged by invoking the right to equality (Article 14) or the rights under Article 19 (freedom of speech, right to assemble peacefully, etc).**

- **Article 39 of the Constitution:** It lists certain directive principles of state policy, which are meant to be guiding principles for the enactment of laws, but are **not directly enforceable** in any court of law.
- *Story of Article 31C:*
- Article 31C was introduced by the **Constitution (Twenty-fifth) Amendment Act, 1971**.
- The Statement of Objects and Reasons for the amendment mentioned **the “Bank Nationalization Case” (Rustom Cavasjee Cooper vs Union Of India, 1970)**.
- In this case, the Supreme Court stopped the Centre from acquiring control of 14 commercial banks by enacting **The Banking Companies (Acquisition and Transfer of Undertakings) Act, 1969**.
- The court held that the ‘right to compensation’ was not appropriately ensured by the Banking Act.
- An eleven-judge Bench struck the Act down by referring to the **now-repealed Article 31(2)**.
- As per Article 31(2), the government could not acquire any property for public purposes under any law unless the law fixes **compensation** for the property, or specifies the principles on which compensation will be based.
- *The Journey of Article 31C:*
- The **25th amendment was challenged** in the **Kesavananda Bharati case (1973)** which held that the Constitution has a **“basic structure”** that cannot be altered, even by a constitutional amendment.
- As a part of this verdict, the court struck down the last portion of **Article 31C** which states **“no law containing a declaration that it is for giving effect to such policy shall be called in question in any court on the ground that it does not give effect to such policy”**.

- This allowed the court to scrutinize legislations enacted to advance Articles 39(b) and 39(c), assessing whether these laws genuinely aligned with the principles advocated in these provisions.
- **The Constitution (Forty-second) Amendment Act:** It was enacted in 1976, which expanded the protection under Article 31C to “**all or any of the principles laid down in Part IV of the Constitution**”, under clause 4.
- As a result, every single directive principle (Articles 36-51) was protected from challenges under Articles 14 and 19 of the Constitution.
- Reasons for the amendment stated that it was meant to give precedence to the directive principles “over those fundamental rights which have been allowed to be relied upon to frustrate socio-economic reforms for implementing the directive principles”.
- **Minerva Mills v. Union of India, 1980:** In this case, the SC struck down clauses 4 and 5 of the amendment.
- The five-judge Bench held that Parliament’s power to amend the Constitution was limited, and it could not be used to remove these limitations and grant itself “**unlimited**” and “**absolute**” powers of amendment.
- Dilemma that needs to be resolved: Did the court’s annulment of a portion of the 25th Amendment effectively nullify Article 31C in its entirety?
- Did it reinstate the post-Kesavananda Bharati stance where Articles 39(b) and (c) remained safeguarded?

The Ongoing Case in SC:

- Challenge to MHADA: The court is hearing a challenge to Chapter VIII-A of the **Maharashtra Housing and Area Development Act, 1976** (MHADA).

- This chapter, introduced by an amendment in 1986, allows the government to acquire “cessed” properties (old, dilapidated buildings) in Mumbai at the request of the occupants, citing the obligation under Article 39(b).
- Occupants of cessed properties that house poor tenants despite becoming increasingly unsafe are required to pay a cess to the Mumbai Building Repair and Reconstruction Board which oversees repair and restoration projects.
- *Challenge to 1986 Amendment:* In 1991, the Property Owners’ Association in Mumbai challenged the 1986 amendment at the Bombay High Court.
- However, the Bombay High Court upheld the amendment, citing the protection granted by Article 31C to laws enacted in furtherance of Article 39(b).
- This decision was appealed at the SC in December 1992, where the question eventually became whether **“material resources of the community” under Article 39(b) included private resources such as cessed properties.**
- Various Arguments in SC:
- Status of the Original Article 31C after the 42nd Amendment: It has been argued that the original version of Article 31C was ‘substituted’ with the expanded version provided in the 42nd Amendment.
- This means the older version ceased to exist once the Amendment came into force. Therefore, when this new Article 31C was struck down in *Minerva Mills*, the older provision would not automatically be revived.
- **Doctrine of Revival:** The doctrine of revival must apply in this case, and the post-*Kesavananda Bharati* position on Article 31C must be restored.

	<ul style="list-style-type: none">• To explain the doctrine and justify its application, observations in the case where the court struck down the Constitution (Ninety-ninth) Amendment Act have been relied upon.• The old collegium system for judge appointments would be revived once the 99th amendment was struck down.• 99th Amendment introduced the National Judicial Appointments Commission.• Automatic Revival of Pre-Amendment Provisions: If the process of substitution and insertion through a constitutional amendment is deemed invalid, the provisions existing before the amendment automatically resurface and regain validity.• This inference stands as a reasonable conclusion.
<p>5. India and RCEP</p>	<p>Four years after India's exit, neighboring nations Sri Lanka and Bangladesh are considering joining the Regional Comprehensive Economic Partnership (RCEP).</p> <p><u>Regional Comprehensive Economic Partnership (RCEP)</u></p> <ul style="list-style-type: none">• It is a free trade area (FTA) consisting of 10 ASEAN members (Brunei, Cambodia, Indonesia, Malaysia, Myanmar, Singapore, Thailand, the Philippines, Laos and Vietnam) and five of the bloc's dialogue partners— China, Japan, South Korea, Australia and New Zealand.• The landmark agreement was signed in November 2020 and It came into force in January 2022.• Together, these RCEP participating countries account for about 30% of the global GDP and 30% of the world population.• The purpose of RCEP was to make iteasier for products and services of each of these countries to be available across this region.• <u>India's withdrawal from RCEP</u>

- India was a founding member of the RCEP. In 2019, India decided to withdraw from the RCEP negotiations.
- **Reasons :** The fundamental reasons for India not joining RCEP was non-consideration of five key demands, namely,
 - **Amendments in tariff differentials,**
 - **Alterations in the base rate** of customs duty,
 - **Modifications to the most favoured nation (MFN)** rule,
 - **Incorporation of certain exemptions** into ratchet obligations within the agreement, and
 - The **recognition of India's federal character** in investment determinations.
 -

Auto Trigger Mechanism in RCEP

- To protect the domestic industry, India proposes the '**auto-trigger' mechanism** to check import surges.
 - According to it, in case **there is a flood of imports** (once duties are eliminated or reduced for RCEP members), after reaching a certain **threshold**, the auto-trigger of **safeguard duties** on imports should be initiated.
 - Through this India can accord some **protection to its local industry.**
- India is opposed to the proposed **Investor-State Dispute Settlement (ISDS)** body, as it does not want its domestic laws to be challenged outside India.
 - However, RCEP countries are in favour of ISDS, because of certain issues faced by companies in India like:
 - Operational permits of international investors in telecom companies were cancelled by the Supreme Court in the wake of the **2G scam.**
 - India is pushing for stringent norms for '**Rules of origin**' to prevent goods being routed through nations with lower duties
 - India is apprehensive that after signing of RCEP, the Indian market will be flooded with the cheap import of the third country which is not a member of RCEP but has signed FTA with other RCEP member.

- **Rules of origin** are the criteria needed to determine the national source of a product. Their importance is derived from the fact that duties and restrictions in several cases depend upon the source of imports.
- Apart from this India wants **greater market access in the services sector.**

China Factor

- The crucial factor behind **India's withdrawal from RCEP was the presence of China**— a country with which India already has a substantial trade deficit even without a formal FTA.
- The fear was that India's trade deficit could widen further if it opened its markets to cheaper Chinese goods without commensurate market access for Indian products in other RCEP countries.
- There was increased opposition from various industry segments and bodies, raising doubts about how RCEP would bring about a difference considering that comparable benefits hadn't materialised from certain existing FTAs.
- **Analysis of withdrawal**
- Analysing exclusively from the standpoint of BoT with China, initial data indicates that India's decision to abstain appears to be one of foresight.
- Early trends indicate that this stance was crucial in safeguarding India's domestic manufacturing base, especially the MSME sector.
- Opening up the Indian market to RCEP members, particularly China, could have had an adverse impact on the country's manufacturing sector and some of the flagship initiatives of the government like the Production Linked Incentive (PLI) scheme.
- There is also a growing view that it would serve India's interest to invest strongly in negotiating bilateral agreements with the US and the EU, both currently a work in progress.
- Now India along with some countries is getting into the U.S.-driven Indo-Pacific Economic Framework for Prosperity (IPEF)

Benefits of RCEP

- Promotes economic growth and regional stability.

- Encourages investments
- Enhances competitiveness and innovation
- Streamlines trade procedures and regulations.

Road ahead

- It must be noted that the impact of an FTA cannot be assessed relying solely on the movement of goods; services and investments must also be considered.
- Given the prevailing political tensions with China, it appears sensible for India to maintain a level of autonomy in its supply chains.
- Relying heavily on China, especially for crucial inputs, could potentially undermine our ability to assertively address any misconduct by that nation.
- Thus, by ensuring a degree of self-sufficiency, India can not only safeguards its economic interests but also take a firm stance in response to any unfavourable actions by China.

6. Fiscal Policy 03-05-2024

- **Fiscal Policy in India** is the cornerstone of its economic strategy, which steers the country through various phases of growth, development, and challenges. It plays crucial role in shaping the nation's development trajectory, influencing its macroeconomic stability, and addressing socio-economic challenges.
- Fiscal Policy refers to government policy in respect of public expenditure, taxation and public debt. It is the means by which the government adjusts its spending levels and tax rates to monitor and influence a nation's economy.
- **Fiscal policy** is based on the principles of Keynesian economics, which basically states that governments can influence macroeconomic

productivity levels by increasing or decreasing tax levels and public spending.

Objectives of Fiscal Policy in India

Some of the main objectives of fiscal policy in India can be seen as follows:

1. To mobilise additional resources into socially necessary lines of development
2. To achieve and maintain economic stability
3. To stabilize the price level.
4. To maintain the growth rate of the economy.
5. To maintain equilibrium in the balance of payments.
6. To raise standard of living of the citizens of the country.
7. To reduce extreme inequality in income and wealth
8. To provide the necessary incentives to the private sector for its healthy growth. etc

Tools of Fiscal Policy

- Major tools of **fiscal policy** used by the government are as follows:

Public Expenditure

- It includes subsidies, transfer payments including welfare programs, public works projects and government salaries. By increasing or decreasing its spending, the government can directly influence economic

activity. For example, more government spending can increase demand, leading to higher output and employment.

Taxation

- The government can influence economic activity through its taxation policy. By reducing taxes, the government leaves individuals and businesses with more income to spend and invest, which can boost economic growth. Conversely, increasing taxes can help cool down an overheated economy by reducing the amount of disposable income available.

Public Borrowing

- Public borrowing refers to the means by which governments finance their expenditures that exceed tax revenues. Under it, the government raises money from the domestic population or from abroad through instruments such as bonds, NSC, Kisan Vikas Patra, etc. Public borrowing is a common practice used to fund public services, infrastructure projects, welfare programs, and to manage the country's fiscal policy.

Other Measures

Other fiscal measures adopted by the government include:

1. Rationing and price control
2. Regulation of wages
3. Increase the production of goods and services.

Difference between Fiscal Policy and Monetary Policy

Fiscal Policy

Monetary Policy

Definition	It is a macro-economic policy used by the government to adjust its spending levels and tax rates to monitor and a nation's economy	It is a macro-economic policy used by the Central Bank to influence money supply and interest rates.	
Institutional Control	Controlled by the Government	Controlled by the Central Bank	
Prime Objective	To influence the economic condition	To influence the money supply and interest rates.	
Major Tools	Public Expenditure, Taxation, Public Borrowing etc	Bank Rate, Cash Reserve Ratio, Statutory Liquidity Ratio etc	
Types of Fiscal Policies			
<ul style="list-style-type: none"> Based on the economic conditions and the objectives that governments aim to achieve, fiscal policy can be categorized into three main types 			
	Expansionary	Contractionary/Tight	Neutral
Mechanism	Fiscal policy that increases aggregate demand directly through an increase in government spending is	Fiscal policy that reduces demand via lower spending is called contractionary or tight.	A neutral fiscal policy refers to a strategy by which the government's budget is designed to neither stimulate nor

	called expansionary.		restrain economic growth.
Objective	The objective of Expansionary Fiscal Policy is to reduce unemployment and also results in better GDP.	The objective of Contractionary Fiscal Policy is to reduce inflation.	The objective of Neutral Fiscal policy is to maintain the status quo in the economy.
Caution	It can cause some inflation.	It can trigger some unemployment.	It may lead to degradation due to inaction in prevailing conditions.
Suitability	This type of policy is usually undertaken during recessions to increase the level of economic activity.	This type of policy is usually undertaken during inflationary periods to control excess money supply.	This type of fiscal policy is usually followed when an economy is in equilibrium.
Cyclicity of the Fiscal Policy			
<ul style="list-style-type: none"> The cyclicity of the fiscal policy refers to a change in direction of government expenditure and taxes based on economic conditions and fluctuations in economic growth. 			

There are two types of cyclical fiscal policies:

1. Counter-Cyclical Fiscal Policy

- It refers to the steps taken by the government that go against the direction of the economic or business cycle.
- For example, in a recession or slowdown, the government, usually, takes the route of expansionary fiscal policy. This increases expenditure and reduces taxes to create a demand that can drive an economic boom. This increases the consumption potential of the economy and helps soften the recession.

In a Recession:

The government takes the route of expansionary fiscal policy i.e. the government expenditure is increased and taxes are reduced.

This increases the consumption potential of the economy and helps soften the recession.

In an Economic Boom:

The government takes the route of contractionary fiscal policy i.e. the government expenditure is decreased and taxes are increased.

This decreases the consumption potential of the economy and helps moderate the boom.

2. Pro-Cyclical Fiscal Policy

- It refers to the type of **fiscal policy** wherein the government reinforces the business cycle by being expansionary during good times and contractionary during recessions.

- Pursuing a pro-cyclical fiscal policy is generally regarded as dangerous as it could raise macroeconomic volatility, depress investment, hamper growth and harm the poor. For example, adopting Contractionary Fiscal Policy during a recession will reduce the government expenditure and increase the taxes. This will further decrease the consumption potential of the economy and deepen the recession.

In a Recession:

Government spending decreases and taxes increase. This further reduces aggregate demand, deepening the recession and leading to higher unemployment and slower economic growth.

This approach can be seen as cutting back when times are already tough, making it harder for businesses and individuals to recover.

In an Economic Boom:

Government spending increases and taxes decrease. This fuels the boom, potentially leading to overheating, inflation, and asset bubbles.

While it might seem appealing to enjoy the extra spending in good times, it can create vulnerabilities and make the inevitable downturn even more severe.

Related Concepts

Fiscal Deficit

- Fiscal Deficit refers to the gap between the government's total expenditure in a given financial year and its total revenue (excluding borrowings) in the same financial year. It is expressed as a percentage of

the Gross Domestic Product (GDP) and is an indicator of the government's financial health.

Fiscal Consolidation

- Fiscal consolidation is a process where government's fiscal health is improved by reducing fiscal deficit to levels which is manageable and bearable for the economy. Improved tax revenue realization and better aligned expenditure are important components of fiscal consolidation.

Fiscal Drag

- Fiscal drag is an economic term whereby inflation or income growth moves taxpayers into higher tax brackets. It occurs mainly due to Progressive Taxation, whereby individuals are moved into higher tax brackets because of inflation or increased income.

Fiscal Neutrality

- Fiscal neutrality is when a government taxing, spending, or borrowing decision has or is intended to have no net effect on the economy. Any new spending introduced by a policy change that is fiscally neutral in this sense is expected to be entirely offset by additional revenues generated. Thus, Fiscal Neutrality creates a condition where demand is neither stimulated nor diminished by taxation and government spending.

Crowding Out Effect

- The crowding out effect is an economic theory suggesting that increased government spending leads to a reduction in private sector spending. This phenomenon occurs because the resources used by the government must come from somewhere, typically through increased taxation or borrowing. Thus, the private sector is left with lesser resources to invest.

Pump Priming

- Pump priming is the action taken to stimulate an economy usually during a recessionary period, through government spending, and interest rate and tax reductions. Pump priming involves introducing

relatively small amounts of government funds into a depressed economy in order to spur growth.

Economic Stimulus

- An economic stimulus is the use of monetary or **fiscal policy** changes to kick start growth during a recession. Governments can accomplish this by using methods such as lowering interest rates, increasing government spending and quantitative easing, to name a few.
- In the wake of COVID-19 Pandemic, the Government announced 3 tranches of economic stimulus under the Atma Nirbhar Bharat Programme.

7. What is Lithium?

- Lithium is an alkali mineral, also called '**white gold**'. It is soft, silvery-white metal, the lightest metal of the periodic table.

Major Properties:

1. High Reactivity
2. Low Density
3. Excellent Electrochemical Properties

Occurrence and Top Producers:

- Lithium is found naturally in various minerals, including **spodumene, petalite, and lepidolite**.
- It is extracted from these minerals and refined into lithium metal or its compounds.
- The top producers of lithium are **Australia, Chile, China, and Argentina**.
- In 2022, **Australia** was the world leader in terms of lithium mine production. **Chile and China** ranked second and third.
- Recently, a massive lithium deposit beneath **California's Salton Sea (US)**, holding an estimated **18 million tons of lithium**, was discovered.

Properties of Lithium

- It is a soft, silvery-white alkali metal.
- Under standard conditions, it is the lightest metal and the lightest solid element.
- Like all alkali metals, lithium is highly reactive and flammable, and must be stored in vacuum, inert atmosphere or inert liquid such as purified kerosene or mineral oil.
- When cut, it exhibits a metallic luster, but moist air corrodes it quickly to a dull silvery gray, then black tarnish.
- It never occurs freely in nature, but only in (usually ionic) compounds.
- Due to its solubility as an ion, it is present in ocean water and is commonly obtained from brines.
- Lithium metal is isolated electrolytically from a mixture of lithium chloride and potassium chloride.
- Lithium takes an active part in many reactions with organic and inorganic reactants. It reacts with oxygen to form monoxide and peroxide.
- Metallic Lithium reacts extremely vigorously with water.
- It has high specific heat which is the calorific capacity.
- It has very low density and low viscosity.
- Lithium is found only in salts and minerals.
- The **alkali metals** consist of the chemical elements lithium, sodium, potassium, rubidium, caesium, and francium. Together with hydrogen they constitute group 1, which lies in the s-block of the periodic table.

- **Rare Metals** (RM) include Niobium (Nb), Tantalum (Ta), Lithium (Li), Beryllium (Be), Cesium (Cs) etc. and Rare Earths (RE) include Lanthanum (La) to Lutetium (Lu) besides Scandium (Sc) and Yttrium (Y). These metals are **strategic in nature with wide application in the nuclear and other high tech industries** such as electronics, telecommunication, information technology, space, defense etc.

Lithium triangle made up of **Argentina, Chile, and Bolivia**—contain roughly half the world's known lithium.



Applications:

- **Batteries:** Lithium is a crucial component of **rechargeable batteries** used in smartphones, laptops, electric vehicles, and other electronics.
- **Glass and Ceramics:** Lithium compounds are used to **strengthen glass and ceramics**, making them more durable and heat-resistant.
- **Medicine:** Lithium is used as a **mood stabilizer** in the treatment of **bipolar disorder**.

- **Lubricants:**Lithium greases are used in **high-pressure and high-temperature**

Lithium in India:

- 2023 saw a surge in lithium discoveries:
- Massive reserves unearthed in **Salal-Haimna areas of Reasi district of Jammu and Kashmir** (estimated 5.9 million tonnes).
- Additional reserves identified in Koderma and Giridih regions of
- However, India has put up lithium blocks for auction:**one in J&K and another in Chhattisgarh**, with most of its domestic requirements, across categories like **EVs**, lithium-ion battery making, and other energy storage solutions, being met completely through imports. Import bill is pegged at around **₹24,000 crore**.

8. Finance Commission of India (FCI)

Article 280 and **Article 281** of the Constitution of India deal with the provisions related to the Finance Commission of India (FCI).

Article No.	Subject Matter
Article 280	Finance Commission
Article 281	Recommendations of the Finance Commission

- Composition of Finance Commission of India (FCI)
- The Finance Commission consists of a **Chairman** and **four other members** to be **appointed by the President**.
- The Chairman and other members of the Commission **hold office**for such **period** as **specified by the President** in his/her order.
- The Chairman and other members of the Commission are **eligible for reappointment**.

- Qualifications of Members of Finance Commission (FC)
- The Constitution **authorizes the Parliament** to determine the qualifications of members of the Commission.
- Accordingly, the Parliament has enacted the **Finance Commission Act, of 1951** which specifies the qualifications of the members of the Finance Commission as follows:
 - The **Chairman** should be a person having **experience in Public Affairs**.
 - The **four other members** should be selected from amongst the following:
 - a **judge of the High Court** or one qualified to be appointed as one.
 - a person who has **specialized knowledge of finance and accounts of the government**.
 - a person who has **wide experience in financial matters and administration**.
 - a person who has **special knowledge of Economics**.
- Functions of Finance Commission (FC)
- The Finance Commission of India is required to **make recommendations** to the President of India **on the following matters**:
 - The **distribution of the net proceeds of taxes** to be shared between the Centre and the States, and the allocation between the States of the respective shares of such proceeds.
 - The **principles** that should **govern the grants-in-aid to the States** by the Centre, i.e., out of the Consolidated Fund of India.
 - The **measures needed to augment the Consolidated Fund of a State** to supplement the resources of the Panchayats and the Municipalities in the State on the basis of the recommendations made by the State Finance Commission.
 - **Any other matter** referred to it by the President in the interests of sound finance.
- Report of Finance Commission (FC)
- The Finance Commission submits its report to the President of India.

- The President of India lays the report of the Finance Commission before both Houses of Parliament along with an explanatory memorandum as to the action taken on its recommendations.
- Aspects of Recommendations of Finance Commission
- The Finance Commission recommendations cover various aspects of fiscal federalism as described below:
- **Vertical Devolution**– It refers to the share of States in the divisible pool of Central taxes.
- This aspect plays a crucial role in promoting fiscal autonomy among States.
- **Horizontal Distribution**– This refers to the allocation of resources among States.
- The Finance Commission makes this recommendation based on a formula so as to ensure equitable distribution of funds and foster balanced development across the regions.
- **Grants-in-aid**– It refers to the additional transfers to specific states or sectors that are in need of assistance or reform. For example, grants for improving the justice delivery system or enhancing the statistical infrastructure in the States.
- This aspect of Finance Commission recommendations aims to promote inclusive growth and address regional disparities within the country.
- Nature of Recommendations of Finance Commission (FC)
- The recommendations made by the Finance Commission are **only advisory in nature**.
- Hence, they are not binding on the Government.
- It is **up to the Union Government whether to implement or not** to implement its recommendations on granting money to the States.
- Role of Finance Commission (FC)
- The Finance Commission of India plays a crucial role in the country's fiscal architecture. Prominent roles played by the Finance Commission (FC) can be seen as follows:

- **Equitable Distribution of Resources:** While recommending the manner of distribution of revenues between the Center and states and among the states themselves, the Finance Commission takes into account **factors** such as **population, area, economic backwardness**, This ensures that the resources of the country are allocated in an equitable manner.
- **Promotes Social Welfare:** The Commission recommends the principles governing the grants-in-aid to states that may not generate adequate revenue themselves for essential services like health, education, and infrastructure. This reduces fiscal imbalances and promotes social welfare.
- **Empowered State Governments:** Increased financial resources provide states with financial autonomy. This, in turn, means that state governments are empowered.
- **Strengthens Local Self:** Government: It also suggests measures to augment the Consolidated Funds of the states to supplement the resources of the Panchayats and Municipalities. This ensures that local bodies have adequate resources to perform their constitutionally mandated functions.
- **Strengthened Federalism:** The commission fosters cooperation and dialogue between the central and state governments on financial matters, promoting a healthy federal structure.
- **Fiscal Consolidation and Discipline:** By recommending measures for maintaining a stable and sustainable fiscal environment, it promotes fiscal stability and sound financial management both at the central and state levels. This, in turn, aids the sound economic growth of the country.
- **Incentivizing Reforms:** By linking financial allocations to reform milestones, the Commission encourages states to adopt best practices that lead to more efficient governance and improved service delivery.
- **Addressing Contemporary Challenges:** The Commission also aids in addressing contemporary fiscal challenges and the changing dynamics

of the **Indian economy**. For example, considering the impact of new financial arrangements and policies, such as the introduction of the Goods and Services Tax (GST).

- **Fiscal Federalism** refers to the division of fiscal responsibilities and financial resources between different levels of government within a federal system. It deals with the distribution of revenue-raising powers, expenditure responsibilities, and fiscal transfers between the Central Government and subnational entities, such as States or Provinces.

Role of the Finance Commission in Promoting Fiscal Federalism

- The Constitution envisages the Finance Commission as the **balancing wheel of fiscal** federalism in India. Accordingly, the Commission plays a crucial role in facilitating Fiscal Federalism in India as can be seen as follows:
- **It bridges the vertical financial imbalances** between the Centre and the States.
- By allocating sufficient resources to them, it **promotes the fiscal autonomy and efficiency of the States**.
- It **bridges inequality among the States** by giving more to the backward States.
- The commission's work necessitates consultation with both the central and state governments. This fosters a **spirit of cooperative federalism**, where all levels of government work together for shared goals.
- **Challenges and Limitations of the Finance Commission (FC)**
- **Data Gaps and Quality Issues**– Finance Commissions depend on official data sources to evaluate the fiscal condition and performance of both the Union and the States. However, these data are mostly incomplete, inconsistent, or outdated.
- **Political Factors**– Finance Commissions must reconcile the **conflicting interests** and demands from the diverse stakeholders, including the

Union Government, State Governments, Local Bodies, Civil Society Groups, etc.

- Additionally, they must consider the changing political and economic scenario in both the country and the world.
- **Resource -Responsibilities Imbalance**– One of the major limitations of the Finance Commission is that its resources are limited while its responsibilities are virtually unlimited.
- **Overlap of Domains**– There exists an intersection between the domains of **the Finance Commission and the Goods and Services Tax (GST) Council**. Decisions made by the GST Council affect the flow of tax revenue to the States and the size of the Central tax revenue pool, which is subsequently distributed among the Central and State Governments as per the recommendations of the Finance Commission.
- **Demands for Centralization of Expenditure**– India has a federal system of governance wherein both the Center and the states have autonomy in their assigned jurisdictions. However, of late, there have been demands for greater centralization of expenditure assignments. Thus, the Commission has to grapple to strike a balance between the two.
- **Limited Control over Third-tier Government**– The Commission has limited control over the third-tier government and makes its recommendations w.r.t. the third-tier government only on the basis of State Finance Commission recommendations. Thus, it plays a limited role in strengthening and building the capacity of local self-government.
- **Implementational Challenges**– The **recommendations** made by the Finance Commission are **only advisory in nature**. This makes it challenging for the commission to ensure that its recommendations are properly implemented and monitored.

Way Forward

- **Permanence**– PV Rajamannar Committee's recommendation of making the Finance Commission a permanent body should be considered.

- **Strengthening Capacity**– The Finance Commission should bolster its analytical and advisory capabilities to enhance its effectiveness. This involves leveraging reliable data sources, employing robust methodologies, and engaging with experts and stakeholders.
- **Enhanced Consultation**– The Commission should improve communication and outreach strategies to disseminate their reports widely, solicit feedback, and foster consensus among stakeholders.
- **Promotion of Cooperative & Competitive Federalism**– The Commission should explore innovative approaches to foster cooperative and competitive federalism, adapting to emerging realities effectively.
- **Addressing Emerging Issues**– In response to evolving economic and social dynamics, The Finance Commission need to remain proactive and responsive. This entails addressing challenges stemming from GST implementation, the Covid-19 Pandemic, Climate Change, and Digital Transformation.
- In conclusion, the **Finance Commission of India (FCI)** stands as a crucial pillar of fiscal federalism, ensuring the equitable distribution of financial resources between the Union and State Governments. As India continues on its path of economic development and social progress, the role of the Finance Commission will continue to remain indispensable. Taking the necessary steps to address the challenges faced by it will go a long way in fostering balanced regional development and ensuring the financial stability of the nation.

15th Finance Commission of India

- – The 15th Finance Commission was **constituted** by the President of India in **November 2017**, under the **chairmanship** of **NK Singh**.
– Its recommendations will cover a period of five years from the year **2021-22 to 2025-26**.
- **16th Finance Commission of India**

- – **Constitution:** The Sixteenth Finance Commission was **constituted on 31.12.2023** with **Shri Arvind Panagariya** as its **Chairman**.
 - a. The Commission has been requested to make its recommendations available by 31.10.2025, covering an award period of 5 years commencing from 1st April 2026.
- **Terms of Reference:** The Finance Commission shall make recommendations as to the following matters, namely:
 - a. The **distribution between the Union and the States** of the **net proceeds of taxes** which are to be, or maybe, divided between them and the allocation between the States of the respective **shares of such** proceeds;
 - b. The **principles** which should **govern the grants-in-aid** of the revenues of the States out of the Consolidated Fund of India and the **sums to be paid to the States** by way of grants-in-aid of their revenues under Article 275 of the Constitution for purposes other than those specified in the provisos to clause (1) of that article; and
 - c. **The measures needed to augment** the Consolidated Fund of a State to supplement the resources of the Panchayats and Municipalities in the State on the basis of the recommendations made by the Finance Commission of the State.
 - d. The Commission may review the current financing structures related to **Disaster Management initiatives**. This involves examining the funds created under the **Disaster Management Act of 2005** and presenting suitable recommendations for improvements or alterations.

9. World Bank's Plan to Combat Methane Emissions

- In an initiative to combat the rising threat of **methane emissions**, the **World Bank** has announced plans to launch a series of

country-led programs, **to reduce up to 10 million tons** of methane over the course of their investment lifespans.

- **Plan Unveiled by World Bank**

- **Need For the Plan:**

- Methane accounts for approximately **19% of global greenhouse gas emissions (GHGs)**, making it a substantial contributor to climate change.
- **Rice production accounts for 8%, livestock 32%, and waste 18% of all human-driven methane emissions**, making targeted efforts in these areas crucial.

- Methane has a much higher global warming potential (GWP) than carbon dioxide.

- Despite **methane being 80 times more potent than carbon dioxide** in terms of **warming the planet**, it has received less attention and funding.

- **World Bank's Planning:**

- The World Bank is set to roll out a **minimum of 15 country-led programs** within the next 18 months.

- According to the World Bank, the move is a **step in addressing the alarming increase in global temperatures** and supporting communities most vulnerable to the impacts of climate change.

- These programs will specifically target methane emissions, employing strategic interventions to curb environmental degradation and promote sustainable practices.

- **World Bank's Triple Win Approach:**

- The ambitious programs will focus on slashing methane emissions from various sources, **including rice production, livestock operations, and waste management.**

- The comprehensive approach to methane reduction outlined by the World Bank **emphasizes triple wins**- reducing

emissions, enhancing resilience, and empowering livelihoods.

▪ **Funding Mechanism:**

- Currently, finance for methane abatement constitutes **less than 2%** of global climate finance.
- The World Bank envisions a substantial increase in financing for methane reduction through public and private sector channels **between 2024 and 2030**.
 - The institution is set to collaborate with Germany, Norway, the United States, the UAE, and the private sector to implement effective solutions and reduce methane emissions across the entire energy value chain.

• **Partnership Platforms:**

- Complementing its efforts, the World Bank is launching **two partnership platforms**:
 - The **Global Methane Reduction Platform for Development (CH4D)** focusing on methane abatement in agriculture and waste.
 - **Global Flaring and Methane Reduction Partnership (GFMR)** concentrating on reducing methane leaks in the oil and gas sector.

• **Global Warming Potential (GWP)**

- GWP is a measure of how much heat a greenhouse gas traps in the atmosphere over a specific time period, **usually 100 years**, compared to carbon dioxide (CO₂).
- It is used to evaluate the potential impact of different greenhouse gases on global warming. The GWP allows for the comparison of

the warming effects of various gases based on their ability to absorb and retain heat in the atmosphere.

- **Carbon dioxide is the reference gas with a GWP of 1. Other greenhouse gases, such as methane (CH₄) and nitrous oxide (N₂O), have higher GWPs because they are more effective at trapping heat.**
- **The Intergovernmental Panel on Climate Change (IPCC)** provides GWP values for different gases. It's important to note that GWP values can vary depending on the time horizon chosen for the comparison.
- **Initiatives to Tackle Methane Emissions**
- **Indian:**
 - **'Harit Dhara' (HD):** Indian Council of Agricultural Research (ICAR) has developed an anti-methanogenic feed supplement **'Harit Dhara' (HD)**, which can cut down cattle methane emissions by 17-20% and can also result in higher milk production.
 - **India Greenhouse Gas Program:** The India GHG Program led by WRI India (non-profit organization), Confederation of Indian Industry (CII) and **The Energy and Resources Institute (TERI)** is an industry-led voluntary framework to measure and manage greenhouse gas emissions.
 - **National Action Plan on Climate Change (NAPCC):** NAPCC was launched in 2008 which aims at creating awareness among the representatives of the public, different agencies of the government, scientists, industry and the communities on the threat posed by climate change and the steps to counter it.
 - **Bharat Stage-VI Norms:** India shifted from **Bharat Stage-IV (BS-IV)** to **Bharat Stage-VI (BS-VI)** emission norms.
- **Global:**
 - **Methane Alert and Response System (MARS):**
 - MARS will integrate data from a large number of existing and future satellites that have the ability to detect methane emission events anywhere in the world, and send out notifications to the relevant stakeholders to act on it.

- **Global Methane Pledge:**

- At the **Glasgow climate conference**(UNFCCC COP 26) in 2021, nearly 100 countries had come together in a voluntary pledge, referred to as the Global Methane Pledge, to cut methane emissions by at least 30% by 2030 from the 2020 levels.

Global Methane Initiative (GMI):

- It is an international public-private partnership focused on reducing barriers to the recovery and use of methane as a clean energy source.
- **Measures can be Taken Further to Reduce Methane Emissions**
- **In the Energy Sector:**Methane emissions occur along the entire oil and gas supply chain, but especially from **fugitive emissions from leaking equipment, system upsets, and deliberate flaring and venting.**
 - Existing cost-effective solutions can help reduce emissions,**including initiating leak detection and repair programs, implementing better technologies and operating practices,** and capturing and utilising methane that would otherwise be wasted.
- **In Agriculture:**The farmers can provide animals with more nutritious feed so that they are larger, healthier and more productive, effectively producing more with less.
 - When it comes to staple crops like paddy rice, experts recommend alternate wetting and drying approaches that could halve emissions.
 - Rather than allowing the continuous flooding of fields,**paddies could be irrigated and drained two to three times throughout the growing season,** limiting methane production without impacting yield.
 - That process would also require one-third less water, making it more economical.

- **In the Waste Sector:**The waste sector accounts for **around 20%** of global human-caused methane emissions.
 - The cost-effective mitigation solutions with the greatest potential related to separating organics and recycling also have the potential of creating new jobs.
 - Upstream avoidance of food loss and waste is also key.
 - Additionally, **capturing landfill gas** and generating energy will reduce methane emissions, displace other forms of fuels and create new streams of revenue.
- **Role of Government:**The Government of India should envision a food system transition policy to help its people grow and consume food differently.
 - Instead of working in silos, **the government must develop a comprehensive** policy that moves farmers to sustainable modes of plant-based food production.
 - **Divert subsidies from industrial livestock production and its associated inputs**, and look at job creation, social justice, poverty reduction, animal protection and better public health as multiple aspects of a single solution.

10. Official languages under the Indian Constitution

Under **Article 343(1)**, the official language of the Union shall be Hindi in Devanagari script, while **Section 3 of the Official Language Act, 1963** talks about the continuance of the English language for official purposes of the Union and for use in Parliament.

However, The **Eighth Schedule of the Indian Constitution** enumerates the official languages of the Republic of India.

Part XVII of the Constitution deals with the official language in **Articles 343 to 351**.

Articles	Provisions
-----------------	-------------------

1. Language of the Union

Article 343(1)	The official language of the Union shall be Hindi in Devanagari script. The form of numerals to be used for the official purposes of the Union shall be the international form of Indian numerals.
-----------------------	--

Article 343(2)	For a period of fifteen years from the commencement of the Constitution, the English language shall continue to be used for all the official purposes of the Union for which it was being used immediately before the commencement of the constitution. However, the President may authorize the use of the Hindi language in addition to the English language for any of the official purposes of the Union.
-----------------------	---

Article 344	Official language commission to be constituted by the President.
--------------------	---

2. Regional Languages

Article 345	The Legislature of a State can adopt any one or more of the languages in use in the State or Hindi as the language to be used for any of the official purposes of the State.
--------------------	--

Article 346	Official language for communication between one State and another or between a State and the Union.
Article 347	President can direct any language that shall also be officially recognized throughout that State or any part of the state.
3. Language of the Judiciary	
Article 348(1)	Until Parliament by law provides English should be used in the following areas all the proceedings in the Supreme Court and in every High Court, the authoritative texts of all bills and ordinances shall be in the English language.
Article 348(2)	The Governor of a State, with the previous consent of the President, authorizes the use of the Hindi language or any other language to be used for any official purposes of the State in proceedings in the High Court having its principal seat in that State. However, the judgments, decrees, and orders of the high court must continue to be in English only.
Article 348(3)	A state legislature can prescribe the use of any language (other than English) with respect to bills, acts, ordinances, etc. However, a translation of the same in the English language is to be published.
4. Special directives	
Article 350	Language to be used in representations for redress of grievances.
Article 350A	Facilities for instruction in mother-tongue at primary stage
Article 350B(1)	Special Officer for linguistic minorities.

Article

351

Directive for development of the Hindi language

Official Language Commission

- The Official Languages Commission is to be established by the **President** in accordance with **Article 344** of the Indian Constitution. The commission was **constituted in 1955** via a notification of the **Ministry of Home Affairs**.

Article 344:

- At the expiration of five years from the commencement of the Constitution and thereafter at the expiration of ten years from such commencement, the president should constitute a commission.
- This commission shall consist of a Chairman and such other members representing the different languages specified in the Eighth Schedule as the President may appoint, and the order shall define the procedure to be followed by the Commission.

Article 344(2):

It shall be the duty of the Commission to make recommendations to the President as to:

- The progressive use of the Hindi language for the official purposes of the Union.
- restrictions on the use of the English language for all or any of the official purposes of the Union.
- The language to be used for all or any of the purposes mentioned in article 348.
- The form of numerals to be used for any one or more specified purposes of the Union.
- Any other matter referred to the Commission by the President.

Significant provisions of the Official Language Act, 1963

- The Official Language Act, 1963 was enacted to provide for the languages which may be used for the **official purpose of the Union**, for the **transaction of business in Parliament**, for Central and State Acts, and for certain purposes in High Courts.

Language of the Union

- At the expiration of the period of fifteen years from the commencement of the Constitution, the English language can continue to be used in addition to Hindi.
- A translation in Hindi should be published of any Ordinance promulgated by the President, of any order, rule, etc, issued under the **Constitution of India**.
- The authoritative text in the English language of all bills shall be accompanied by a translation of the same in Hindi.
- **Regional language**
- English is mandated as the medium of communication between the Union and the non-Hindi states.
- **Language of the Judiciary**
- The Governor of a State, with the previous consent of the President, authorize the use of Hindi or the official language of the State, in addition to the English language.
- Any judgment, decree, or order is passed or made in any such language (other than the English language), it shall be accompanied by an English translation.

Other provisions

Committee on Official Language:

- After the expiration of ten years from the date on which section 3 comes into force, a committee shall be constituted to review the progress made in the use of Hindi for the official purposes of the Union.
- **Power to make rules:**

- The Central Government can make rules for carrying out the purposes of this Act.
- **How many languages are there in the Eighth Schedule, and what are the benefits of inclusion under the Eighth Schedule?**
- The Eighth Schedule tries to ensure equitable representation for the multi-ethnic and multi-lingual nation.

Eighth Schedule of the Constitution consists of the following 22 languages:

Assamese	Bengali	Gujarati	Hindi	Dogri (2004)
Kannada	Kashmiri	Konkani (1992)	Malayalam	Maithili (2004)
Manipuri (1992)	Marathi	Nepali (1992)	Oriya	Bodo (2004)
Punjabi	Sanskrit	Sindhi (1967)	Tamil	Santhali (2004)
Telugu	Urdu			

Benefits of inclusion under the Eighth Schedule:

- The **National Sahitya Akademi** recognizes the languages of the Schedule as literary languages by default.
- The Eighth Schedule has played the important role of an arbitrator in deciding the **medium of instruction in secondary schools**. The languages used should be modern Indian languages mentioned in the Eighth Schedule of the Constitution as well as English.
- The **All-India level competitive examinations** are conducted for entrance into higher and technical education and employment by different organizations. The Eighth Schedule languages are used by them in selected spheres.
- **What steps could be taken to protect the linguistic diversity of India?**

- India is a country with immense linguistic diversity. To protect this linguistic diversity, there are several steps that can be taken:
- **Encourage multilingual education:** Children should be taught their mother tongue apart from other languages at the school level to preserve the regional languages and promote multilingualism.
- **Documenting and preserving languages:** The government can set up a national database to document and preserve endangered languages.
- **Promote the use of regional languages:** The government can promote the use of regional languages in official communication. This will help to protect the linguistic diversity of India.
- **Language policies:** The government can implement language policies that promote the use of regional languages in various domains, such as government offices, media, and the entertainment industry.
- **Protect linguistic rights:** Ensure that all languages are respected and protected under the law and that minority language speakers have equal access to education, government services, and employment opportunities.

11. Centre State Financial Relations

Centre State Financial Relations, delineated in **Part XII** of the Indian Constitution (Articles 264-293), govern the distribution of financial resources and responsibilities between the central and state governments. These provisions outline mechanisms for **revenue sharing, taxation powers, grants-in-aid**, and other financial matters. The goal is to ensure **fiscal autonomy** for states while also maintaining **financial stability** and **equity** across the country. These relations play a crucial role in **fostering cooperative federalism** and ensuring the effective functioning of the Indian federal system.

Financial Relations can be studied under the following heads

- **Article 265:** Taxes not to be imposed except by authority of law

Allocation of taxation powers

- **Union List/State List:** Parliament/state legislature has exclusive power to levy taxes on subjects enumerated in the Union/State List.
- **Residuary Power:** The **residuary power is vested in the Parliament.** Under this provision, the Parliament has imposed **gift tax, wealth tax and expenditure tax.**
- **Concurrent List:** **There are no tax entries in the Concurrent List.** In other words, **the concurrent jurisdiction is not available** with respect to tax legislation.
- **Concurrent Powers for GST Legislation:** However, The **101st Amendment Act of 2016** has made an exception by making a special provision with respect to GST.
- This Amendment has conferred concurrent power upon **Parliament and State Legislatures** to make laws governing GST.
- **Constitutional Distinction:** The Constitution along with some restrictions on the taxing power of the states, also draws a distinction between the **power to levy and collect a tax** and the **power to appropriate** the proceeds of the tax so levied and collected.
- **Distribution of Non-tax Revenues**
- **Major Sources of Non-tax Revenues of the Centre:** (i) posts and telegraphs; (ii) railways; (iii) banking; (iv) broadcasting (v) coinage and currency; (vi) central public sector enterprises; (vii) escheat and lapse; 19 and (viii) others.
- **Major Sources of Non-tax Revenues of the States:** (i) irrigation; (ii) forests; (iii) fisheries; (iv) state public sector enterprises; (v) escheat and lapse; and (vi) others

GRANTS IN AID TO STATES

Statutory Grants	Discretionary Grants
<p>Art. 275: Grants to the states which are in need of financial assistance and not to every state. Charged on the Consolidated Fund of India every year.</p> <p>The Constitution also provides for specific grants for promoting the welfare of the scheduled tribes in a state or for raising the level of administration of the scheduled areas in a state (including the State of Assam).</p> <p>The statutory grants under Art. 275 are given to the states on the recommendation of the Finance Commission.</p>	<p>Art 282: Empowers both the Centre and the states to make any grants for any public purpose, even if it is not within their respective legislative competence. These grants form the larger part of the Central grants to the states</p> <p>These grants are also known as discretionary grants, the reason being that the Centre is under no obligation to give these grants and the matter lies within its discretion.</p> <p>These grants are to help the state financially to fulfill plan targets and to give some leverage to the Centre to influence and coordinate state action to effectuate the national plan.</p>
<p>Other Grants</p>	<p>The Constitution also provided for a third type of grants-in-aid, but for a temporary period. A provision was made for grants in lieu of export duties on jute and jute products to the States of Assam, Bihar, Orissa and West Bengal. These grants were to be given for a period of ten years from the commencement of the Constitution.</p>

	<p>These sums were charged on the Consolidated Fund of India and were made to the states on the recommendation of the Finance Commission.</p> <p>Following bills can be introduced in the Parliament only on the recommendation of the President (Art.274):</p> <p>Bill which imposes or varies any tax or duty in which states are interested;</p> <p>Bill which varies the meaning of the expression “agricultural income”;</p> <p>Bill which affects the principles on which money are or may be distributable to states;</p> <p>Bill which imposes any surcharge on any specified tax or duty for the purpose of the center.</p> <p>“Tax or duty in which states are interested”:</p> <p>A tax or duty the whole or part of the net proceeds whereof are assigned to any state; or</p> <p>A tax or duty by reference to the net proceeds where of sums are for the time being payable, out of the Consolidated Fund of India to any state.</p> <p>Net Proceed (Art. 279): The proceeds of a tax or a duty – the cost of collection.</p> <p>It is ascertained and certified by the CAG. His certificate is final.</p>
<p>Protection of the State’s interest</p>	<p>Center (Art. 292)</p> <p>Can borrow on CFI (Within + Outside India) within limits fixed by parliament.</p>
<p>Borrowing by the Centre and the States</p>	<p>State (Art. 293)</p> <p>Cannot raise any loan without center consent (If there is an outstanding loan to center)</p>

	<p>Can make loans to any state or give guarantees in respect of loans raised by any state.</p> <p>Centre's property is exempted from all taxes imposed by a state or any authority within a state like municipalities, district boards, panchayats and so on. But the Parliament is empowered to remove this ban.</p> <p>The property may be used for sovereign (like armed forces) or commercial purposes.</p> <p>The corporations or the companies created by the Central government are not immune (as they are separate legal entities) from state taxation or local taxation.</p> <p>The property and income of a state is exempted from Central taxation. Such income may be derived from sovereign functions or commercial functions.</p> <p>But the Centre can tax the commercial operations of a state if Parliament provides so.</p> <p>The property and income of local authorities situated within a state are not exempted from Central taxation.</p> <p>Likewise, the property or income of corporations and companies owned by a state can be taxed by the Centre.</p> <p>The Centre can impose customs duty on goods imported or exported by a state, or an excise duty on goods produced or manufactured by a state – advisory opinion of the Supreme Court, 1963.</p>	<p>Can borrow on CFS (Within not outside India) within limits fixed by parliament</p>
<p>Exemption of Union property from taxation of state (Art. 285)</p>		
<p>Exemption of State property from central taxation (Art.289)</p>		
<p>Effects of Emergency</p>	<p>National Emergency (Art. 352)</p>	<p>Financial Emergency (Art. 360)</p>

The **President can modify** the constitutional distribution of revenues between the Centre and the states.

Can either **reduce or cancel** the transfer of finances (both tax sharing and grants-in-aid) from the Centre to the states.

Such modification continues **till the end of the financial year** in which the emergency ceases to operate.

Center can give directions to the states:

To observe the **specified canons of financial propriety.**

To **reduce the salaries and allowances** of all class of persons serving in the state; and

To **reserve all money bills** and other financial bills for the consideration of the **President.**

Distribution of Tax revenues

Article	Levy	Collection	Appropriation	Various Taxes
268	Centre	States	States	Stamp duties on shares, cheque, promissory notes, insurance etc. Taxes on interstate trade and commerce.
269	Centre	Centre	States	Revenues do not form part of the consolidated fund of India.
270	Centre	Centre	Shared between Centre and states	All taxes and duties in the union list except Duties and taxes referred

					<p>to in Articles 268, 269 and 269-A, Surcharge on taxes and duties referred to in Article 271</p> <p>Surcharge on taxes under Art 269, 270.</p> <p>Goods and Services tax (GST) is exempted from this surcharge. This surcharge can't be imposed on the GST.</p>
271	Centre	Centre	Centre		
Others					
Levy and Collection of GST in Course of Inter-State Trade or Commerce (Article 269-A)					
Taxes Levied and Collected and Retained by the States: These are the taxes belonging to the states exclusively eg: land revenue, tax on mineral rights, etc.					
<u>Committees on Centre-State Relations</u>					
By Center			By State		
Sarkaria Commission (1983)			Rajamannar Committee – Tamilnadu		
Punchhi Commission (2007)			Anandpur Sahib Resolution – Akali		
Administrative Reforms Commission I and II			Dal of Punjab		
<ul style="list-style-type: none"> ▪ While the Constitution provides mechanisms for revenue sharing and grants, the evolving dynamics necessitate continuous dialogue and cooperation between the central and state governments to address fiscal challenges effectively. 					

	<ul style="list-style-type: none"> This relationship underscores the importance of collaborative decision-making and resource allocation in ensuring equitable development and fiscal stability across the nation.
	<p>12. Tanjore painting</p> <p>The paintings of Tanjore were influenced by Indian art during the 16th century, when the Nayaka Governors, under the leadership of the Vijayanagara Rayas, governed their large realm in southern India.</p> <p>The Nayakas were ardent supporters of literature and the arts. Following the establishment of Maratha control in the area in 1676, Maratha kings promoted the growth of artists and the arts. Tanjore painting took off during this period and evolved into the shape and style that we are familiar with today. Large paintings of Maratha emperors, courtiers, and nobles were used to decorate Maratha palaces and buildings.</p> <p>The majority of the gods were portrayed as having almond-shaped eyes, round faces, and sleek bodies. The figures, which were frequently grouped closely together under arches, draperies, and elaborate borders, were painted in flat hues. Tanjore paintings were known for their thick compositions, and the faces were typically darkened to create a sense of depth.</p> <p>The Company Style</p> <ul style="list-style-type: none"> The British who had invaded Tanjore following the Mysore Wars (1767–1799) supported the Tanjore artists when Maratha control began to wane. Tanjore saw the establishment of a British garrison in 1773, which later served as a base for British forces. Over the following century, Indian painters in and around Tanjore created sets of paintings for Company employees. These groups were referred to as album paintings or albums. These were sets of "native" or "Indian" subjects, painted in a style that catered to the tastes and sensitivities of the English. In addition to the standard topics of gods and incidents from Hindu mythology, additional subjects that caught the attention of the English

were fairs, ceremonies, festivals, caste jobs, and Indian flora and wildlife. They were finished with little to no gold foil and without any inlay of glass or gems. Additionally, summaries of the subject matter were included with the paintings in both Tamil and Telugu in addition to English. Even though these paintings were classified as belonging to the Company school of painting, the same group of traditional artists usually created Tanjore-style paintings with Tanjore characters.

The Tanjore Method

- Because they are usually painted on boards made of jackfruit or teak wood, Tanjore paintings are known as *palagai padam*, which translates to "picture on a wooden plank." Tanjore paintings are known for their vivid colours and gold leaf decorations. Cut glass, pearls, and precious and semi-precious stones are also frequently utilized as decorative elements.
- Over time, artificial paints have supplanted the natural colours that artists once achieved using vegetable and mineral dyes. Tanjore paintings combine vivid tones of green, blue, and red in their stunning colour scheme. This makes these paintings distinct from other Indian art traditions, as do their rich and intricate compositions. Bal Krishna, Lord Rama, and many gods, goddesses, saints, and figures from Hindu mythology are frequent motifs in Tanjore paintings.

Migrant Artists

- The Raju community of Tanjore and Tiruchy, as well as the Naidu community of Madurai, used to create the Tanjore paintings. These artists, who were initially Telugu-speaking and hailed from Andhra Pradesh, relocated to Tamil Nadu after the fall of the Vijayanagara Empire. These artists placed a high value on patronage; as a result, the scale of their paintings varied according to the subject matter and the preferences of their patrons.

- Painters had to be extremely persistent and meticulous to achieve the high standards required by Tanjore paintings. In addition, the master craftsmen were expected to create the artwork with a certain level of ritual purity and humility, as it was regarded as a sacred undertaking. In keeping with the Indian tradition of art, the majority of artists choose to stay anonymous and never date their paintings.

Gesso's Uniqueness

- The Gesso Work, or its three-dimensional quality, is the most distinctive feature of Tanjore Paintings. To put it another way, the Tanjore Painting features embossed zones, something that most other pieces of art do not. In other words, there are areas of the picture that are raised above the ground. The term "gesso work" in craftsmanship refers to this embellishment.
- In Europe, gesso is typically applied to columns and other structural elements; it was never used in any creative works at that time. One of the most unique methods and techniques that may be used in an artistic endeavour is gesso work. That is the level of creativity that Tanjore artisans brought to the creation of the artwork. The gold foil overlay on the Gesso work is another unique component that allows you to do more with the material than with the strategy. We use real 22-carat gold foil, which is never blurry because it is composed of real gold.

Diverse Stylistic Influences

- Tanjore painting was greatly impacted by other well-known Vijayanagara school painting styles, such as the Tirupati and Kalamkari schools, in addition to the many cultural groups that supported the art form. Many of the Tirupati paintings, which depicted deities and were created in the well-known temple town of Tirupati using a variety of mediums and techniques, were gilded and gem-set in a style reminiscent of Tanjore paintings.

- The majority of reverse glass paintings, another type of traditional South Indian Indian art, were strongly influenced by Tanjore paintings. These paintings featured colourful depictions of religious figures, enhanced by the addition of metallic foils and other elements.
- Many traits between Tanjore painting and the popular art form of Mysore painting cause confusion between the two. They both date back to the Vijayanagara era and were created by artists from the Raju and Naidu groups.
- Though the styles are surprisingly similar, there are major variations such as the use of paper as the substrate for Mysore paintings and its limited use of gold foil, glass beads, and precious and semi-precious stones. In contrast to the rich composition of Tanjore paintings, the themes in Mysore paintings mirror the contemporary style that was popular at the Mysore Palace and also shows more elaborate landscapes.

Tanjore Painting Features

- In ancient times, precious stones such as diamonds and rubies adorned these paintings, set against a backdrop of 22-karat gold foil. The remaining canvas burst with vibrant hues, creating a spectacle of color.
- A distinctive feature of Tanjore paintings lies in the cherubic countenances of the deities, imparting a sense of purity and sanctity to the artwork.
- These paintings predominantly depict tales from Hindu mythology, including significant mythological events such as the nuptials of Meenakshi, romantic interludes between Radha and Krishna, and the coronation of Shri Rama. Artisans meticulously craft the foundation of each painting, instilling it with a distinctive three-dimensional quality that sets it apart.

- Tanjore paintings are often exchanged as gifts during festive occasions like Diwali and Pongal, or presented at weddings. They also serve as exquisite adornments for homes and establishments.
- The bold hues, gleaming gemstones, and golden embellishments infused within these paintings illuminate any space, infusing it with warmth and vitality.

Tanjore painting is a traditional style of Indian art that originated in the town of Thanjavur (formerly known as Tanjore) in the state of Tamil Nadu. Here are some of its distinctive features:

- **Rich Colors:** Tanjore paintings are known for their vibrant colors. They often use bright shades of red, blue, green, and gold leafwork to create an opulent effect.
- **Gesso Work:** One of the unique features of Tanjore paintings is the use of gesso work. Gesso is a mixture of chalk, gypsum, and glue applied to the surface to create embossed patterns and motifs.
- **Iconography:** Tanjore paintings typically depict Hindu gods and goddesses, especially figures like Lord Krishna, Lord Ganesha, and Goddess Lakshmi. These paintings often feature intricate detailing of jewelry, clothing, and accessories.
- **Gold Leaf:** Gold foil or leaf is extensively used in Tanjore paintings to embellish the artwork. This gives the paintings a luxurious and divine appearance.
- **Flat Perspective:** Tanjore paintings often employ a flat perspective, where figures are portrayed in a stylized and symbolic manner rather than with realistic proportions and perspectives.
- **Architectural Elements:** Many Tanjore paintings incorporate architectural elements such as pillars, arches, and ornate backgrounds, adding to their grandeur.

- **Thick Wooden Frames:** Traditionally, Tanjore paintings are framed with thick wooden borders adorned with intricate carvings or designs, enhancing their aesthetic appeal.

Why are Tanjore Paintings So Expensive?

- The costliness of Tanjore Paintings can be attributed to the **materials utilized in their creation**.
- Traditionally, artists begin by preparing the canvas with a blend of limestone and glue, a meticulous process that not only imparts a unique texture but also enhances durability.
- Following this, artisans engage in intricate gold leaf work, employing authentic gold foil to craft the intricate embellishments and intricate details that define Tanjore paintings. The incorporation of genuine gold elevates their worth, given its status as a precious material.
- Moreover, the vivid and captivating colors adorning these paintings are derived from natural pigments, which also contribute to their high price due to their quality and expense.
- Genuine Tanjore paintings are distinguished by their elaborate gold leaf work and embellishments. Ensure that the gold leaf used by the artists is authentic and verify if the artistic elements adhere to the traditional style.

Legacy of Tanjore Art

- The Indian government designated Tanjore Painting as a Geographical Indication in 2007–2008. A geographical indicator is a label applied to products that identify their origin or precise geographic area. The Geographic Indication Registry, a division of the Ministry of Commerce and Industry's Department of Industry Promotion and Internal Trade, is responsible for issuing this tag. After that, comparatively less expensive imitation gold foil sheets began to appear on the market; this helped spur

enthusiasts to preserve the art form while also supporting dishonest profit-making objectives.

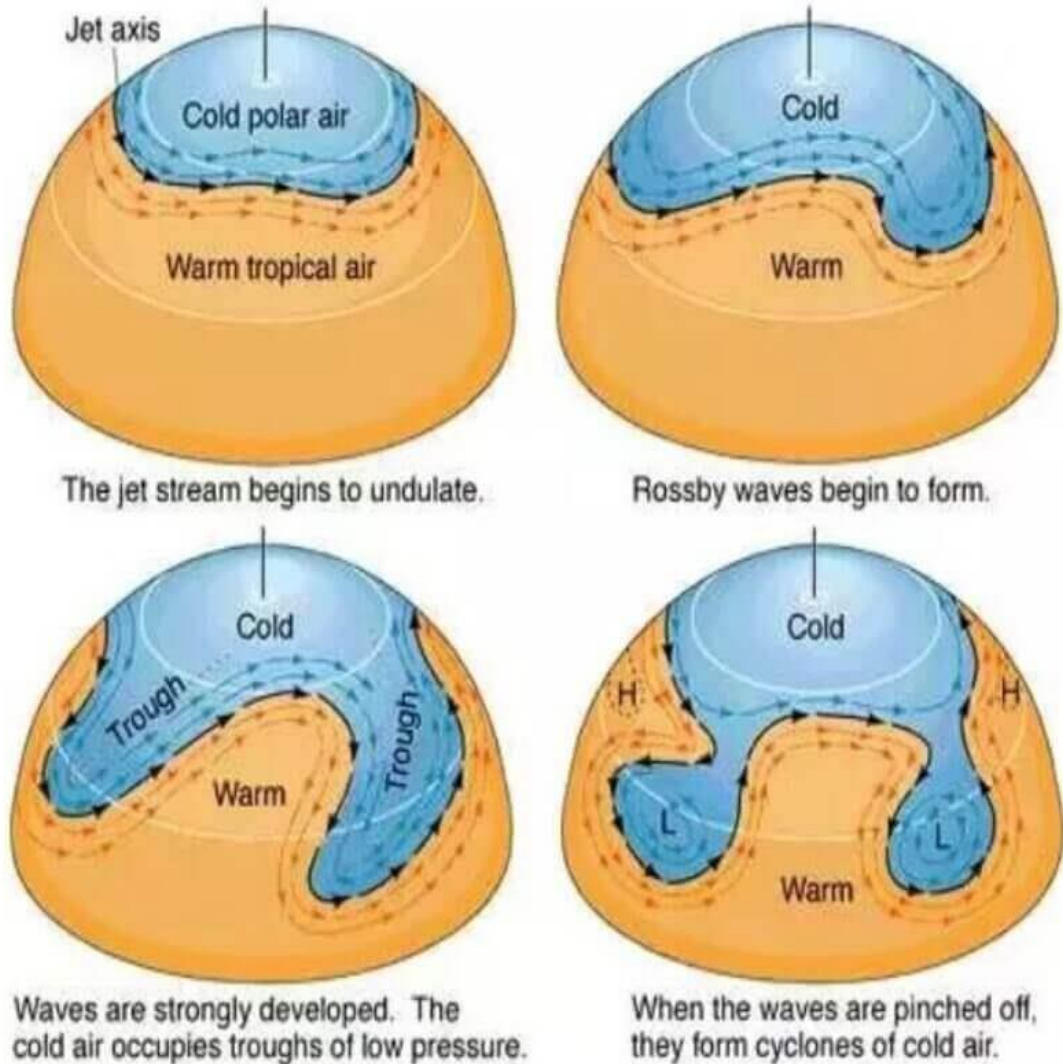
- Apart from that, the form hasn't changed all that much. For almost a century, its defining idiom—the stunning gold foil on gesso, a white paint mixture with embedded jewels, flat, vibrant colours, and divine figures—has remained mostly unchanged. However, Thanjavur art was not usually like this. Indeed, if it weren't for the numerous early trials carried out by the local artists, the widely used application of gold film on gesso would never have emerged.
- Tanjore painting is being practised today, mostly by a small group of committed artists from Tamil Nadu. Plywood has taken the place of jackfruit and teak wood in the artworks, along with the change to synthetic colouration. Tanjore paintings are still quite popular today. They have been heavily marketed in recent years and are now being sold in street markets.
- Even though the art form has endured and is still in demand, many art enthusiasts find the overall drop in quality unsettling. The fact that training camps and workshops are being organized to preserve the rich, traditional, and creative components that define Tanjore painting as an art form while ensuring its continued survival is encouraging.

13. Jet Streams: Formation, Types, Distribution, and Effects

Jet Streams are a fast, narrow current of air flowing from west to east that encircles the globe in **upper troposphere** (about 8-14 kms above Earth's surface).

Jet Streams, **also known as Rossby Waves**, are thousands of kilometers in length and a few hundred kilometers in width and having a vertical thickness of two or more kilometers.

- The mean velocity of Jet Streams is about 144 km/h. However, at times the mean velocity of inner core of Jet Streams may be as high as 480 km/h.
- Jet Streams **occur in both the Northern and Southern Hemispheres.**
- Since these hot and cold air mass boundaries are most pronounced in winter, Jet Streams are **the strongest during both the northern and southern hemisphere**
- Jet Streams also “follow the Sun” – **they move northward and southward with the apparent movement of the Sun.**
- In summers they move poleward and in winters they shift equatorward.



What causes Jet Streams?

- Jet Streams **form when warm air masses meet cold air masses in the atmosphere.**
- When Earth's warmer air masses meet cooler air masses, the warmer air rises up higher in the atmosphere while cooler air sinks down to replace the warm air.

- This movement creates an air current, or wind. A jet stream is a type of air current that forms high in the atmosphere.

What are the four primary Jet Streams?

- Earth has four primary Jet Streams: two polar Jet Streams, and two subtropical Jet Streams.
- The regions around 30° north and south of equator and 50°-60° north and south of equator are areas where temperature changes are the greatest.
- As the difference in temperature increases between the two locations the strength of the wind increases.
- Therefore, the regions around 30° N/S and 50°-60° N/S are also regions where the wind, in the upper atmosphere, is the strongest.
- The 50°-60° N/S region is where the polar jet is located with the subtropical jet is located around 30°N.
- Earth's four primary Jet Streams **only** travel from west to east. So, Jet Streams typically move storms and other weather systems from west to east.

Subtropical Jet Streams Vs Polar Jet Streams

- A *subtropical jet* is **predominantly a high-altitude feature**.
- In contrast, *eddy-driven* Polar Jet Streams **are deeper**, and it is these specifically, which reach all the way down to the surface.
- The two jets are sometimes **separated** in latitude (often this is the case **over the Atlantic Ocean**), but sometimes **merged together (as is more common over the Pacific Ocean)** forming a broader region of mid-latitude west-to-east winds.

Why do the Jet Streams move from west to east?

- The **rotational speed of the Earth's surface, and thus the air above it**, decreases from equator towards poles.

- As a result, air moving away from the equator does not move directly north and south because it retains this rotational momentum, causing it to rotate faster than the surface below as it moves toward the poles.
- Therefore, as air moves towards the poles, it also moves from west to east relative to the surface. **This is the Coriolis effect.**
- This Coriolis force deflects the north-south transport of heat from the equator to the poles into the predominantly east-west motion of the jet stream.

Why do Jet Streams not flow in a straight path from west to east?

- The Jet Streams normally do not flow in a straight path from west to east, but rather meander in alternating troughs and ridges. These waves are called **Rossby waves**.
- There are **two major reasons for these non-zonal motions**: the temperature gradient between the equator and the poles and the presence of land masses on the earth's surface.
- The meridional temperature gradient between the equator and poles that gives rise to the jet stream also produces secondary atmospheric circulations, or eddies.
- The eddies modify the distribution of temperature and kinetic energy within the atmosphere, a process that has a pronounced effect on the location and movement of the jet stream.
- And the jet stream itself interacts with these waves, not only as a transport or steering mechanism but also in the transfer of momentum and energy back to the waves.
- The presence of land masses on the earth's otherwise watery surface modifies the distribution of temperature, because continents heat and cool at a dramatically different rate than do the oceans.
- The topography of the land also influences the jet stream's location. Mountain ranges and plains on large continents, for example, significantly affect the distribution of atmospheric temperature.

- And since the **jet stream is a thermally driven phenomenon**, the more complicated the three-dimensional temperature structure of the earth's atmosphere, the more 'wandering' will take place in the course of the jet stream.

How do Jet Streams affect weather?

- Jet Streams play a significant role in determining the weather conditions in **lower atmosphere**.
- The fast-moving air currents in a jet stream can transport weather systems, affecting temperature and precipitation.
- However, if a weather system is far away from a jet stream, it might stay in one place, causing heat waves or floods.
- Thus, movement of Jet Streams is also important in determining prolonged periods of floods or droughts.
- The **path followed by temperate cyclones** or mid-latitude weather disturbances are largely controlled by these upper air circulations.
- So, we see that **surface meteorological conditions are highly affected by the path of Jet Streams**.
- Jet Streams also affect the regularity of monsoonal winds.

Jet Streams and El Nino

- When an El Nino causes excess heating in the tropical Pacific upper atmosphere, the air flow toward the poles becomes more vigorous.
- El Nino tends to lead to an elongated **Subtropical Jet Stream** that can extend all the way to North America and bring an above-average supply of storms across the southern part of the United States.

How are Jet Streams linked to heatwaves?

- Scientists believe the recent global heatwaves are linked to a strange pattern in the jet stream that has been called "**wavenumber 5**."
- When the jet stream forms into a U-bend shape, it can generate heatwaves. Five of these U-bends are currently circling the world in a pattern.
- This pattern is what scientists are calling wavenumber 5, and that it "can persist for weeks, causing hot areas to stay hot for a long time".

Jet Streams and Indian Weather

- Subtropical Westerly Jet Stream
- Over India, the subtropical westerly Jet Stream blows south of the Himalayas (27° - 30° north latitude), **all through the year except in summer.**
- This subtropical westerly jet stream is largely **responsible for bringing winter rainfall** experienced in the north and north-western parts of the country through **Western Cyclonic Disturbances.**
- An increase in the prevailing night temperature generally indicates an advance in the arrival of these cyclones disturbances.
- Meteorologists have found an interrelationship between the **northward shift of the equatorial trough**, also known as the Inter Tropical Convergence Zone (ITCZ), **and the withdrawal of the westerly jet stream from over the North Indian Plain.**
- Easterly Jet Stream
- In summer, the subtropical westerly jet stream moves north of the Himalayas with the apparent movement of the sun.
- An Easterly Jet Stream, called the sub-tropical easterly jet stream blows over peninsular India, approximately over 14 - 15° N during the summer months.
- This Jet Stream owes its origin to heating of Tibetan plateau due to shifting of Sun's rays to northern hemisphere.
- This easterly Jet Stream runs from the east coast of Vietnam to the west coast of Africa.
- The easterly jet stream sets in along 15° N latitude only after the western jet stream has withdrawn itself from the region.
- This easterly jet stream is held **responsible for the burst of the monsoon in India.**
- Around the time of the arrival of south-west Monsoon in India, the normal rainfall increases suddenly and continues constantly for several days. This is known as the 'burst' of the monsoon

- **During Break monsoon conditions Easterly Jet Stream moves northwards up to latitude 20°N.**
- During the south-west monsoon period after having rains for a few days, if rain fails to occur for one or more weeks, it is known as break in the monsoon.
- During the active periods of monsoon, the axis of the Tropical Easterly Jet Stream (TEJ) is located near 5°N latitude and during break periods it is located around 15°N latitude.
- Intensity of the Easterly Jet Stream is weak (strong) during El Nino (La Nina) events.
- Besides, a strong Easterly Jet Stream is associated with excess Indian Summer monsoon rainfall and vice-versa.
- The Easterly Jet Stream also **steers the tropical depressions into India.**
- These depressions play a significant role in the distribution of monsoon rainfall over the Indian subcontinent.
- The tracks of these depressions are the areas of highest rainfall in India.

How do Jet Streams affect air travel?

- Jet Streams are located about 8-14 kms above Earth's surface in the mid to upper troposphere and generally blow from west to east.
- Airplanes also fly in the mid to upper troposphere. So, if an airplane flies in a powerful jet stream and they are traveling in the same direction, the airplane can get a boost.
- That's why an airplane flying a route from west to east can **generally make the trip faster than an airplane traveling the same route east to west.**
- Weather satellites, such as the Geostationary Operational Environmental Satellites-R Series (GOES-R), use infrared radiation to detect water vapor in the atmosphere. With this technology, meteorologists **can detect the location of the Jet Streams.**

14. Stupa Architecture

- A **stupa** (literally “heap” or “pile”) is a reliquary, a shrine containing the remains of a holy or sainted person and/or artifacts (relics) associated with them, originating in India prior to the 5th century BCE as tombs of holy men and evolving afterwards into sacred sites dedicated to the Buddha (l. c. 563 – c. 483 BCE).
- Later, **stupas were also raised to honor Buddhist arhats (saints), bodhisattvas (enlightened ones), other saintly figures, or local deities.** A stupa is a **hemispherical structure**, with a spire at the top, sometimes situated on a base that varies in shape and size (depending on the designated purpose of that particular stupa) surrounded by a walkway for visitors.
- **Buddhism was the earliest Indian religion to require large communal spaces for worship.**
- This led to **three types of architectural forms** the **stupa, the vihara and the chaitya.**
- Many religious Buddhist shrines came up between the 1st century BC – 1st century AD.
- The **term stupa has been referred to in Rig Veda but not in the context as we know it.** The term then referred to the **fire coming out of the sacrificial altar.**
- **Rigveda refers to a Stupa raised by the King Varuna** above the forest in a place having no foundation.
- **Pali word “Thupa” means a conical heap, a pile or a mound** or a conical or bell shaped shrine containing arelic.
- Stupa, originally the **focus of a popular cult of the dead, is a large burial mound containing a relic of the Buddha.**
- **It celebrates the Buddha’s parinirvana (end of cycle of suffering),** symbolizes his eternal body, and is an object of worship.

- There is evidence of community patronage of landowners, merchants, officials, monks, nuns and artisans associated with these Buddhist projects.
- **Initially stupas were Buddha's relic places.** Then it got **extended to his followers as well and gradually stupa itself became an object of worship.**
- **Some stupas, such as the Great Stupa at Sanchi, India, or the Boudhanath Stupa at Kathmandu, Nepal,** are large, ornate structures while others are more modest.
- The **construction of stupas, on a large scale and associated with Buddhism, began throughout India during the reign of Ashoka the Great (268-232 BCE) of the Mauryan Empire (322-185 BCE)** after his conversion to Buddhism.
- **Prior to Ashoka's reign, there were eight stupas (or ten, according to some scholars) dedicated to the Buddha (and containing his cremated remains) at different sites,** which correlated to important events in his life. In an effort to spread Buddhism and encourage the enlightenment of his subjects, Ashoka had the remains disinterred and ordered the construction of **many more** (84,000, according to legend), each one receiving a certain allotment of the remains which empowered the structure with mystical energy.
- **Buddhist stupas are only one type, as there are also Hindu and Jain stupas, but Buddhist stupas remain the most popular, and their construction, worldwide, has been the most prolific.**
- Stupas exist in countries around the world, from **India to Sri Lanka, Nepal, China, European nations, Australia, the United States, and more.** Whichever culture raises one of these structures, its purpose is always the same: to provide a sacred space for people to center themselves on higher thoughts and revitalize themselves spiritually.
- After the demise of Buddha and his cremation at Kushinagar and later the **corporeal relics was distributed among 8 Mahajanapadas.**

- **Initially 8 Stupas (Saririka Chaityas) were constructed at 8 centres → Rajagrihya, Vaishali, Kapilavastu, Allakappa, Ramagrama, Vethadipa, Pava and Kushinagara.**
- **Drona the Brahmin who initiated the distribution, himself erected a Stupa** to enshrine the urn that was used to divide the relics.
- **Mauryas** arrived too late for a share of the relic and were given the wood ashes from the cremation pyre, and **they too built a Stupa in their city of Pippalavana.**
- **Thus all together 10 Stupas were erected i.e. 8 on corporeal relics and two on urn and over wood ashes by Drona and the Mauryas respectively.**
- Stupa is built on the **relics of buddha** like his **bodily remains and objects used by him.**
- They were built by the donations of king specially of **Satavahanas**; guilds such as **ivory workers; men and women, bhikkhus and bhikkhunis.**
- **Jatakas mentions about the existence of Stupa** but does not throw any light on the structural details of Stupa.
- **Sujata Jataka and Bahiya Sutta describes Stupas as raised earthen mounds to commemorate the deceased →** This indicates that most probably prior to Ashoka most of the stupas were made of clay.
- Archaeological excavations and findings proved that **during Ashoka's reign use of bricks and stone for constructional purpose became popular.** Predecessors of Ashoka like **Bimbisara and Ajatsatru both had constructed a number of Stupas in honour of the Buddha** which contained relics of Buddha.
- With the emergence of **Mahayana sect it was not necessary that all the Stupas contained relics. It was taken over by the image worship**, with the transformation from non-iconic to iconic for changes were also found in the architectural patterns.
- **After Ashoka none of the Mauryan ruler showed any interest in propagating Buddhism.** Then the Sungas gave a new dimension to the

Stupa architecture. **During Sunga and Ikshvakus period enlargement and additions were made in the existing Stupas of Sanchi, Bharhut and Amravati.**

- **Meaning, Function & Structure of Stupa**
- The fundamental basis of Buddhism is that **life is suffering: one suffers for want of what one does not have but, once one has that thing, suffers for fear of losing it and, once it is gone, suffers the loss.**
- As long as one lives, one will suffer in this way but, the Buddha realized, **there was a way to stop suffering, and this was to change the way one interpreted the world and one's self.** Through an understanding of the **Four Noble Truths, and practicing the precepts of the Eight-Fold Path**, one could elevate one's understanding of existence, control one's thoughts and actions, and live at peace with one's self and others.
- All that one **desires, fears losing, and mourns for are ephemeral** – they were not made to last – and so are without final meaning; one should, therefore, appreciate these aspects of life for what they are but not cling to them since it is their nature to appear for only a short time and then vanish. The **Buddhist stupa is a physical manifestation of this understanding which invites adherents to both center and elevate themselves through various rituals or simply by gathering and focusing their energies at the site.**
- The **physical appearance of the stupa is intended to elevate the mind.** The **top spire (yasti) symbolizes the axis mundi (axis of the world)**, the line through the center of the earth which the universe revolves around. It is also thought to represent the World Tree whose roots are deep within the earth and branches in heaven, a symbol common in many cultures around the world. The **yasti is surrounded by a square gate known as the harmika**, and over the yasti and harmika are **parasols which symbolize protection, majesty, and the Buddha himself.**
- The large hemisphere descends from the yasti to a **platform or base, sometimes square**, which is often surrounded by a wall with **four gates (toranas) corresponding to the four cardinal directions.**

These directions, in turn, relate to four events in Buddha's life:

- **East – Birth of Buddha**
- **South – Enlightenment of Buddha**
- **West – First Sermon of Buddha**
- **North – Nirvana/Release from Samsara of Buddha**

Basic structure of Stupa

- The stupa consists of a **square platform** known as **medhi**.
- On medhi there is a hemispherical structure which encloses a casket.
- The medhi is surrounded by **vedika(boundary wall)**.
- **Between the medhi and the vedika was pradakshina path or the circum-ambulatory.**
- On the stupa there was **harmika** followed by **one or more chatris** which signified '**axis mundi**' or **axis of the world**.
- **Features of Stupa**
- The stupa's core was composed of **unburnt brick**, with a **burnt brick outer face covered** in a thick coating of plaster.
- The stupa was capped by a wooden railing that encircled a **pradakshina walkway** (circumambulatory path).
- It is a magnificent stupa with a circumambulatory route and a circular mound. During the **time of Ashoka**, the big stupa at **Sanchi** was erected with **bricks**, then covered with stone and many further additions were made.
- **Gateways** were added in addition to the **circumambulatory circuit**. With the elaborations in stupa design, architects and sculptors had plenty of room to plan elaborations and carve out images.
- **Wooden sculptures** were used to embellish the **medhi and toran**. As a form of worship, devotees walk around the pradakshina patha, or open ambulatory pathway.

- Sculptures were largely utilized to decorate stupas, the **torana**, and the **medhi**, as well as a form of religious expression.
- The **three chhatra** on the stupas symbolize the **Buddhist triratnas: Buddha** (the enlightened), **Dhamma** (doctrine), and **Sangh** (community).
- **Bairat in Rajasthan** has one of the **outstanding examples of a stupa building from the third century BCE**.
- **Sanchi Stupa in Madhya Pradesh**, for example, is the **most well-known Ashokan stupa**. The **oldest is the Piprahwa stupa in Uttar Pradesh**.
- Rajagriha, Vaishali, Kapilavastu, Allakappa, Ramagrama, Vethapida, Pava, Kushinagar, and Pippalivana are the nine stupas built following Buddha's death.

Structure of Stupa – terminology

Anda

- It is the semi-circular mound built on earth.

Harmika

- It is the balcony like structure above anda.
- It is believed to be the living place of god.

Yashti

- It is the mast above harmika surmounted by umbrella.

Railing

- It is around the mound believed to separate the stupa from surrounding world and make it sacred.

Chatra

- It is the umbrella built on the **top of the dome**

Pradakshinapatha

- It is the path for clockwise circumambulation surrounded by a fence built encircling the stupa.
- Stone balustrade (wooden fence) consisted of thabas (octagonal upright posts) capped by uhnisa (continuous capping stone).

- These posts are connected by **3 horizontal rails** called **Suchis**.

Torana

- Gateways having sculptures depicting Jataka Tales

Medhi

- Square platform

Aniconist buddha

- It is related with Hinayana or Theraveda Buddhism.
- It prohibits representing Buddha in human form.
- Instead they use symbol → Example Empty seat to indicate meditation of Buddha; wheel represent Dharmachakra and first sermon of Buddha in sarnath, stupa indicate mahaparinirbana of buddha.

Stupa Architecture in North India

- There is very little information regarding the history of the development of Stupa architecture in north.
- The **Gupta period** is considered as the golden age of Indian history.
- Guptas were Vaishnavites but were tolerant towards Buddhism.
- It is said that the Stupa at Sarnath was built during the Gupta period.
- **Stupa Architecture in South India**
- The architectural movement in the south (Andhra) flourished under **Satavahanas**.
- Rock cut architecture of **Hinayana sect** became more prominent.

Northern India

Southern India

**Presence of torana
dwara**

No torana dwara

Circular stupa

Non circular stupa

No decorations on
hemispheres

Decorations present on hemisphere

Buddha depicted
by **symbols**

Buddha depicted by **symbols as well as in anthropomorphic forms**

Different kinds of Stupas

- **Sharirik** – the casket enclosed the **mortal remains of various Buddhist figures** such as the sariputra and maudgalayan stupa at sanchi.
- **Paribhogika** – the casket enclosed the **various objects and utensils** used by the various Buddhist figures during their lifetime.
- **Uddeshika** –mainly **used for pooja and aradhana**

Classification of Stupas based on form and function

- **Relic Stupa**–in which the relics or remains of the Buddha, his disciples and lay saints are interred.
- **Object stupa** – in which the items interred are objects belonged to the Buddha or his disciples such as a begging bowl or robe, or important Buddhist scriptures.
- **Commemorative stupas** – built to commemorate events in the lives of Buddha or his disciples.
- **Symbolic stupa** – to symbolise aspects of Buddhist theology, for example, Borobuddur is considered to be the symbol of “Three Worlds (dhatu) and the spiritual stages (bhumi) in a Mahayana bodhisattva’s character.”
- **Votive stupas** – constructed to commemorate visits or to gain spiritual benefits, usually at the site of prominent stupas which are regularly visited.
- **Stupa Architecture in different periods**
- The shape of the stupa represents the Buddha, crowned and sitting in meditation posture on a lion throne.
- His crown is the top of the spire; his head is the square at the spire’s base; his body is the vase shape; his legs are the four steps of the lower terrace; and the base is his throne.

The stupa represents the **five purified elements**

1. The **square base** represents earth

2. The **hemispherical dome/vase** represents water

3. The **conical spire** represents fire

4. The **upper lotus parasol and the crescent moon** represents air

5. The **sun and the dissolving point** represents the element of space

- The core of the stupa was made up of unburnt brick and the outer face of burnt brick, covered with thick layer of plaster.
- The stupa was crowned by an umbrella of wooden fence enclosing a path for pradaskshina (circumambulatory path).
- One of the best examples of the structure of a stupa in the **3rd century BC is at Bairat in Rajasthan**. It is a very grand stupa having a circular mound with a circumambulatory path.
- The great stupa at Sanchi was built with bricks during the time of Ashoka and later it was covered with stone and many new additions were made.
- Ashoka was responsible for the construction of several stupas, which were large halls, capped with domes and bore symbols of the Buddha.
- The most important ones are located at Bharhut, Bodhgaya, Sanchi, Amravati and Nagarjunakonda.
- **In the subsequent century, stupas were elaborately built with certain additions like the enclosing of the circumambulatory path with railings and sculptural decoration.**
- There were numerous stupas constructed earlier but expansions or new additions were made in the 2nd century BC.
- The stupa consists of a **cylindrical drum and a circular and a with a harmika and chhatra on the top** which remain consistent throughout with minor variations and changes in shape and size.
- The **three chhatra on the stupas represent triratnas of Buddhism i.e. Buddha (The enlightened), Dhamma (doctrine) and Sangh (order).**

- Apart from the circumambulatory path, gateways were added.
- Thus, with the elaborations in stupa architecture, there was ample space for the architects and sculptors to plan elaborations and to carve out images.
- **During the early phase of Buddhism, Buddha is depicted symbolically through footprints, stupas, lotus throne, chakra, etc.**
 - This indicates either simple worship, or paying respect, or at times depicts historicization of life events.
 - **Gradually narrative became a part of the Buddhist tradition.**
 - Thus events from the life of the Buddha, the Jataka stories, were depicted on the railings and toranas of the stupas.
 - Mainly synoptic narrative, continuous narrative and episodic narrative are used in the pictorial tradition.
 - While **events from the life of the Buddha became an important theme in all the Buddhist monuments, the Jataka stories also became equally important for sculptural decorations.**
 - The main events associated with the Buddha's life which were frequently depicted were events related to the birth, renunciation, enlightenment, dhammachakrapravartana, and mahaparinibbana (death).
 - Among the **Jataka stories that are frequently depicted** are Chhadanta Jataka, Vidurpundita Jataka, Ruru Jataka, Sibi Jataka, Vessantara Jataka and Shama Jataka.
 - The original brick Stupa built during Ashoka's time was at first enclosed by wooden fence and later replaced by the massive stone balustrade.
 - All the four gateways were in beautiful sculptures.
- **Piprahwa Stupa (Uttar Pradesh)**
- Piprahwa is a village near Siddharthnagar city in **Siddharthnagar district of the Uttar Pradesh.**

- Piprahwa is best known for its archaeological site and excavations that suggest that it may have been the **burial place of the portion of the Buddha's ashes** that were given to his **own Shakya clan**.
- A **large stupa and the ruins of several monasteries as well as a museum** are located within the site. Ancient **residential complexes and shrines** were uncovered at the adjacent mound of **Ganwaria**.
- **Ramabhar Stupa (Kushinagar, UP)**
- Ramabhar Stupa was built over a portion of the Buddha's ashes on the spot where he was cremated by the ancient **Malla people**.
- Ramabhar Stupa, also called a **Mukutbandhan-Chaitya, is the cremation place of Buddha**. This site is 1.5 km east of the main Nirvana Temple on the Kushinagar-Deoria road.
- dome shaped monument having brickworks and stands at a height of 49 feet
- **First Relic (Saririka) Stupas at Vaishali**
- Buddha Relic Stupa, enshrining **one of the eight parts of the mortal remains of Lord Buddha after he attained Mahaparinirvana**, is one of the most revered sites for Buddhists and a protected one for Archaeological Survey of India (ASI), located around 55km northwest of Patna in Vaishali district.
- The **Buddha Relic Stupa was built by Lichhavis as a mud-stupa in the 5th century BC**.
- **Asoka**→ **opened the stupa to take out a little of the relic and thereafter closed the monument** while keeping back the original casket and coated the stupa with bricks.
- The stupa was later discovered in an archaeological excavation carried out under the aegis of Patna-based K.P. Jayaswal Research Institute during 1958-1962.
- The relic casket excavated from the core of the stupa contained the holy ashes of Lord Buddha mixed with earth, a piece of conch, pieces of beads, a thin golden leaf and a copper punch-marked coin.
- The casket was brought to Patna Museum in 1972.

- **Kesariya Stupa (Bihar)**
- Kesariya stupa is a Buddhist stupa in Kesariya, **located at a distance of 110 kilometres (68 mi) from Patna, in the Champaran (east) district of Bihar.**
- The stupa is said to be the **tallest and the largest Buddhist stupa** in the world.
- Kesariya Stupa has a **circumference of almost 400 feet (120 m) and raises to a height of about 104 feet (32 m).**
- The ASI (Archaeological Survey of India) has declared it a protected **monument of national importance.**

History:

- The **first construction of the Stupa is dated to the 3rd century BCE.** The original Kesaria stupa probably dates to the time of **Ashoka (circa 250 BCE)**, as the remains of a capital of a **Pillar of Ashoka** were discovered there.
- The current stupa dates to the **Gupta Dynasty between 200 AD and 750 AD** and may have been associated with the 4th century ruler **Raja Chakravarti.**
- The **stupa mound may even have been inaugurated during the Buddha's time**, as it corresponds in many respects to the description of the stupa erected by the Licchavis of Vaishali to house the alms bowl the Buddha has given them.
- In ancient times, **Kesaria was under the rule of the Mauryas and the Licchavis.**
- **Two great foreign travelers, Faxian (Fahien) and Xuan Zang (Hsuan Tsang)**, had visited this place in ancient times and have left interesting and informative accounts of their travels.
- The **discovery of gold coins bearing the seal of the famous emperor Kanishka of the Kushan dynasty (AD 30 to AD 375)** goes on to further establish the ancient heritage of Kesaria.

Exploration:

- The stupa's exploration **had started in the early 19th century** after its discovery led by Colonel Mackenzie in 1814.
- Later, it was **excavated by General Cunningham in 1861-62 and in 1998 an ASI team led by archaeologist K.K. Muhammad** had excavated the site properly.

I. Bairat Stupa

- Bairat Temple is a **freestanding Buddhist temple**, a **Chaityagriha**, located about a mile southwest of the city **Viratnagar, Rajasthan**, India, on a hill locally called "**Bijak-ki-Pahari**" ("**Hill of the Inscription**").
- The temple is of a **circular type, formed of a central stupa surrounded by a circular colonnade and an enclosing wall**.
- It was **built during the time of Ashoka in the 3rd century BCE**, and near it were found two of Ashoka's **Minor Rock Edicts**, the Bairat and the Calcutta-Bairat Minor Rock Edicts.
- Bairat's history goes back to the time of the Mahabharata, when it was known as "**Viratnagar**". **Viratnagar was the capital of the ancient Mahajanapada (kingdom) of Machcha or Matsya**.
- The **Banganga River originates from a nearby village, Mair**.

II. Sanchi Stupa

- Sanchi is a **Buddhist complex**, famous for its Great Stupa, on a **hilltop at Sanchi Town in Raisen District of the State of Madhya Pradesh**.
- Early Indian sculpture that adorned the 1st-century BC entrances of the Buddhist relic mound known as the **Great Stupa at Sanchi**, Madhya Pradesh, which is considered one of the most spectacular monuments of its time. **From the 3rd century BC to the 11th century AD, the territory of Sanchi, like the great centers of Sarnath and Mathura, had a continuous artistic history**.
- The **Sanchi Stupa** is one of India's most important **Buddhist landmarks**, and it houses some of the country's earliest stone buildings.

Also, It is an important monument of Indian architecture and one of India's oldest stone constructions.

- It was commissioned in the **third century BCE** by **Mauryan ruler Ashoka** the Great. It began with a basic **hemispheric brick** edifice erected over the **Buddha's relics**. Originally, it was smaller than its present dimensions. It was expanded in later periods.
- Sanchi, a historical city nestled in the **Vindhya Range** 46 kilometers from Madhya Pradesh's capital Bhopal, also has 50 additional sites, including temples and monasteries.
- The beautiful carvings and inscriptions show Indian architecture from the **Mauryan era** (3rd century BCE) through its downfall in the later medieval age (around 11th century CE).
- The **Mahastupa (Great Stupa)**, the **Ashokan pillar (with its inscriptions)**, and the beautiful torans are all noteworthy features of the Sanchi complex (gateways).
- **Since 1989, Sanchi Stupa has been a UNESCO World Heritage Site.** Madhya Pradesh is home to Sanchi.
- It is possibly India's best-preserved Buddhist monument complex.
- **Historical background**
- Sanchi's monuments currently consist of a collection of **Buddhist monuments** that date from the **Mauryan Empire (3rd century BCE)**, continue through the **Gupta Empire (5th century CE)**, and conclude around the 12th century CE.
- The **Great Stupa, also known as Stupa No. 1, is the oldest and greatest monument.**
- It was created under the **Mauryans** and is **ornamented with one of Ashoka's Pillars.**
- The **Great Stupa** was enlarged and ornamented **with gates and railings** in the succeeding centuries, particularly during the **Shungas and Satavahanas**, and minor stupas, including **Stupa No.2 and Stupa No.3**, were also built in the vicinity.
 - **Stupa-1** is presumed to have the **relics of the Buddha,**

- **Stupa-2**, the relics of ten less famous **arhats** belonging to three different generations. Their names are found on the relic casket.
- **Stupa-3** has the relics of **Sariputta and Mahamougalayana**.
- According to **Ashokavadana**, the stupa was vandalized sometime during the 2nd century BCE, an incident that some have linked to the ascension of the **Shunga** monarch **Pushyamitra Shunga**, who overthrew the **Mauryan Empire** as an army officer.
- The first stupa may have been **demolished by Pushyamitra**, and **his son Agnimitra rebuilt it**, according to legend.
- During the Shunga period, the original brick stupa was covered with **stone**.
- In 1819, British captain **Edward Fell** wrote one of the first accounts of the Sanchi Stupa.
- It took another 93 years for John Marshall to 'rediscover' the site, and another seven years for it to be restored to its current state.
- **Sanchi Stupa – Features**
- The **Mahastupa (Great Stupa)**, the Ashokan pillar (with its inscriptions), and the beautiful torans are all noteworthy features of the Sanchi complex (gateways).
- The **torans and fencing** are reported to be modeled after the bamboo crafts of the surrounding areas.
- The design of the stupa's fencing, as well as the torans' design, are reminiscent of bamboo craft and knotted bamboo.
- **Bricks** were used to construct the original construction. It was afterward covered with stone, **vedica**, and **torana (gateway)**.
- The **stupa has four entrances**, with the southern one being the first to be completed. Others were added subsequently.
- The **gateways are ornately carved and ornamented with statues. Two vertical pillars and three horizontal bars** make up each **torana**. On the front and back of the bars are **magnificent sculptures**.

- They feature depictions of **shalabhanjika**, or **women grasping a tree branch**.
- Here are carved stories from the **Jataka tales**.
- A lower and upper pradakshina patha, or circumambulatory walk, runs around the structure. This stupa's upper pradakshina patha is unusual.
- The **Ashokan Lion Capital pillar**, which has inscriptions on it, may be seen on the **southern side of the stupa**.
- Buddha is shown symbolically as an **empty throne, feet, chhatra, stupas, etc.**
- The **Anda** refers to the stupa's hemispheric dome. It is where the Buddha's relics are kept.
- On top of the dome/mound lies the **harmika**, which is a square railing.
- On top of the **harmika**, the **chhatra** is an umbrella. The location contains a sandstone pillar inscribed with **Ashoka's Schism Edict**.
- During the rule of the **Shunga dynasty**, the original brick dome was doubled in size, with stone slabs covering the previous dome.
- **Connection with Buddhism**
- Surprisingly, **Buddha never came to Sanchi**.
- Foreign travelers like **Hiuen Tsang**, who documented the famous Buddhist circuit in India but didn't mention Sanchi in his books, didn't know either.
- Sanchi was not as revered as other Buddhist pilgrimage sites in India, according to Marshall's *The Monuments of Sanchi* (1938).
- The **iconic images of Buddha** (like the Bodhi tree, a riderless horse, an empty throne, etc.) at Sanchi, according to scholars like Alfred A Foucher, are the result of **Graeco-Buddhist architectural** interaction.

III. Bharhut stupa

- **Bharhut stupas** are tall, like the Mauryan depictions of Yaksha and Yakshini, and the sculptural volume is modeled in low relief to ensure linearity. A large stupa was built in **100 B.C. in Bharhut**, which is now part of modern-day **Madhya Prade in Satna District**).

- The **Bharhut stupa may have been established by the Maurya king Ashoka in the 3rd century BCE, but many works of art were added during the Sunga period**, with many friezes from the 2nd century BC.
- This stupa is primarily important for its sculpture as the dome is **now vanished**.
- Bharhut sculptures are tall, like the **Mauryan depictions of Yaksha and Yakshini**, and the sculptural volume is modelled in low relief to ensure linearity.
- The illusion of **three-dimensionality** is conveyed with slanted perspective in the relief panels displaying storytelling. The **narrative's clarity** is improved by focusing on key occurrences.
- Its **railings are made of red stone**.
- Gateways, pillars and the uprights and crossbars, all are full of sculptures depicting **pictorial representations of nature**.
- These sculptures portray some realistic scenes of daily life.
- The **stupa (now dismantled and reassembled at Kolkata Museum)** contains numerous birth stories of the Buddha's previous lives, or Jataka tales.
- Unlike the Mauryas' imperial art, the reliefs and figures in **Bharhut stupa** were provided by **lay people, monks, and nuns**, according to inscriptions on the railings. As a result, it is considered one of the earliest instances of Maurya popular art.
- The Buddha's previous incarnations' birth stories, known as **Jataka tales**, are depicted on the railings.
- The **aniconic phase** of Buddhist art is represented by the Bharhut stupa. Buddha has been shown as a **series of symbols**.
- Except for one foreigner, presumed to be an **Indo-Greek soldier**, who is represented wearing the Indian dhoti with **Buddhist iconography**, the style is mainly flat, with low bass relief, and all figures are depicted wearing the Indian dhoti.
- The Bharhut stupa railings feature several depictions of **yakshas and yakshis**, who have long been a part of Indian society.

- The earliest depictions of the **Yakshas and Yakshis**, which later became part of later art, may be seen at Bharhut. These represent the spirit of nature and help to remind us of the divinity that lurks beneath all we see.
- The **Yakshas and Yakshis** represent nature's protection and plenty, which ensures the continuation of life.
- **Kubera**, whom the Yaksha and Yakshis attend, is depicted on the north gateway of the **Vedika at Bharhut**.
- The photos of Yakhsi Chandra and Krishika, who are seen entangled with a tree, can be found. Another Yakshi, Ashok Dohada, holds an Ashoka Tree leaf in her palm as well as a kid in her womb (two hearts) and weaves her way through the tree like a creeper, symbolizing fertility.
- One of the sculptures depicts **Laksmi** on the Bharhut's railing, which is the earliest representation of the goddess.
- The sculptures on the Bharhut railings are in low relief and do not have the depth of later **Indic art**.
- A **Greek warrior** is depicted on a pillar of the vedika. He has short hair and a headband and is dressed in boots and a tunic.
- **A Nagaraja**, the serpent king, is shown on another fence, dressed in human form but wearing a **serpent hood**. **Naga deities**, like yakshas and yakshis, serve to remind us of the power, protection, and fertility of nature.
- The railing of the Bharhut "stupa" depicts **Queen Maya's dream**, which occurred before the Buddha's birth.
- The figure of the Buddha was never depicted in early Buddhist art. Instead, symbols of him were there, including a seat, footprints, the **Bodhi tree**, the wheel, and the "stupa." The railings' sculptural reliefs are a veritable collection of early **Buddhist iconographic elements**.
- **Narrative reliefs** at Bharhut show how artisans used the pictorial language very effectively to communicate stories.

- In one such narrative, showing **Queen Mayadevi's (mother of Siddhartha Gautam) dream, a descending elephant is shown.**
- **The queen is shown reclining on the bed whereas an elephant is shown on the top heading towards the womb of Queen Mayadevi.**

IV. Dhamek Stupa (Sarnath)

- **Dhamek Stupa** (also spelled Dhamekh and Dhamekha, traced to Sanskrit version Dharmarajika Stupa, which can be translated as the **Stupa of the reign of Dharma**) is a **massive stupa located at Sarnath, 13 kilometres (8.1 mi) away from Varanasi** in the state of Uttar Pradesh, India.
- An **Ashoka pillar with an edict engraved on it stands** near the site.
- **It was built in 500 CE to replace an earlier structure commissioned by Ashoka in 249 BCE**, along with several other monuments, to commemorate the Buddha's activities in this location.
- While visiting Sarnath in 640 CE, **Xuanzang** recorded that the colony had over 1,500 priests and the main stupa was nearly 300 feet (91 m) high.
- In its current shape, the stupa is a **solid cylinder of bricks and stone** reaching a height of 43.6 meters and having a diameter of 28 meters.
- The basement seems to have survived from Ashoka's structure: the stone facing is chiseled and displays delicate floral carvings of Gupta origin.
- The wall is covered with exquisitely carved figures of humans and birds, as well as inscriptions in the Brāhmī script.

Importance of Sarnath

- The Dhamek Stupa is said to mark the spot **Rishipattana**, where **Buddha gave the first sermon to his first five Brahmin disciples after attaining enlightenment, "revealing his Eightfold Path leading to nirvana"**.

- In several of the ancient sources the site of the first sermon is mentioned to have been at a "Mriga-dayaa-vanam" or a sanctuary for animals.
- **Stories associated with Sarnath**
- From Bodh Gaya, Buddha went to the **Deer Park (Mrigadava) in Sarnath**, where the five monks who had been with him during his ascetic phase were staying.
- It was there that he gave his first sermon, an event known as the **Dharma Chakra Pravarttana, or turning of the wheel of law.**
- In ancient times, this place was known by many names — **Rishipatana, Mrigadava and Mrigadaya.**
- The word Sarnath comes from a corruption of the name **Saranganatha (lord of deer).**

The first Sermon

- In his **first sermon to the five companions, Buddha spoke of the Four Noble Truths and the eightfold path that frees people from suffering.**
- He said that **there are two ways of life: one is to indulge in all the pleasures of the world and the other is to deny oneself these pleasures.**
- The **middle path is the way to achieve nirvana**, he said.
- **Foundation of Sangha**
- It is in Sarnath that Buddha laid the foundation of his sangha, or organisation of monks.
- He had 60 disciples whom he sent to different parts of the country to spread his teachings.
- He also established an order of female monks, which was joined by his wife.

Excavation in Colonial Period

- The beautiful stupas and monasteries in Sarnath were excavated under Sir **Alexander Cunningham.**

- He excavated the Dhamekh, Dharmarajika, and Chaukhandi stupas along with a monastery and temple between 1834 and 36.
- Many excavations followed these, the most famous among them being the 1904-05 excavation by **Friedrich Oscar Oertel** of the Ashoka Pillar, including the Lion Capital.

National Emblem of India

- **On top of the Ashokan pillar in Sarnath was the the Lion Capital and the Dharmachakra, but the Lion Capital is now housed in Sarnath museum**, while the pillar remains where it was originally.
- The **Lion Capital was adopted as the national emblem of India in 1950.**

Survived several invasions

- After Ashoka, the other rulers who added to Sarnath's glory were the Kushans, the Guptas and Harshavardhana.
- Under the Guptas, the Dharmekh stupa was encased with stone-carved floral designs.
- Sarnath suffered from the Huna invasions, but Harshavardhana later restored some of the earlier buildings.
- Sarnath also suffered when it was attacked by Mahmud of Ghazni. Mahipala, the Pala king, restored the monuments.

Cultural Significance

- Architect James Fergusson remarks that the sculptured band on the central part of the Dhamek stupa, which has geometric patterns of great intricacy similar to the mosques in Delhi and Ajmer.
- The calligraphy on the screen of Quwwat-ul-Islam mosque, built by Qutbuddin Aibak in the Qutub complex in Delhi, does bear resemblance to the stupa.

V. Amaravati School (Amaravati Stupa)

- The **Amarāvati Stupa (also known as Mahachaitya)** is a **ruined Buddhist stūpa at the village of Amaravathi, Palnadu district, Andhra Pradesh** (on the banks of the **Krishna River**).

- The Amravati Stupa, **also known as the Great Stupa of Amravati**, is a damaged Buddhist monument.
- It was probably **built in phases between the third century BCE and about 250 CE**, but in later centuries it was **transformed from a Hinayana shrine to a Mahayana shrine**.
- Developed **during the period of the Satvahana & Ikshvaku dynasty**.
- The Archaeological Survey of India is in charge of safeguarding the site.
- The site's notable sculptures are now housed at a number of museums in India and overseas, many of which are severely damaged.
- Amaravati stupa is different from the Bharhut and Sanchi stupas. It had **free-standing columns surmounted by lions near the gateways**. The **dome was covered with sculptured panels**.
- The stupa had an **upper circumambulatory path on the drum** as at Sanchi. This path had two intricately carved railings. The **stone is greenish-white limestone** of the region.
- Other locations where the Stupa were Built in Southern India – **Goli, Jagghahpeta, Bhattiprolu, Gantasala, Nagarjunakonda**
- **Buddhist Monuments of South India**
- **Vengi** in Andhra Pradesh has many stupa sites like **Jagayyapetta(AP), Amaravati(AP), Bhattiprolu(AP), Nagarjunkonda(AP), Goli(AP)**, etc.
- At **Anakapalli near Vishakhapatnam**, caves were excavated and a huge **rock-cut stupa** was carved out of the hillock during the fourth–fifth centuries CE.
 - It is a unique site as it has the **biggest rock-cut stupas** in the country.
- **Bojjannakonda and Lingalakonda** are two Buddhist sites which exist on adjacent hillocks near a village called Sankaram in Vishakhapatnam district, located just a few kilometers from Anakapalle.

VI. Nagarjunakonda

- The second most important site after Amaravati is **Nagarjunakonda** located near Nagarjuna Sagar in **Palnadu district** of the Indian state of Andhra Pradesh.

- This was a large **monastic vihara or “university”**, which is now submerged under a lake created by the Nagarjuna Sagar Dam.
- Many remains were relocated to what is now an island in the lake, but most sculptures are now in various museums, in India and abroad.
- **The Chandavaram Buddhist site is another large stupa.**

VII. Sannati Maha-stupa

- Sannati or Sannathi is a small village, located **on the banks of the Bhima River in Chitapur taluk of Kalaburagi district of Northern Karnataka.**
- mahastupa the diameter of which was around 75 ft.
- exposed the **medhi along with hundreds of sculptured slabs with lotus designs** and other decorations
- **Kanganahalli**
- Image of Ashoka – Ranyo Asoka inscribed on it
- Prakrit and Brahmi Script
- limestone bass-relief sculptures

VIII. Gandhara Stupa

- The **Gandhara stupa is a further development of stupas at Sanchi and Bharhut.**
- In **Gandhara stupas the base, dome and the hemisphere dome are sculpted.**
- The stupa tapers upward to form a tower like structure.
- The **stupas of Nagarjunakonda in Krishna valley were very large.**
- At the base there were brick walls forming wheel and spokes, which were filled with earth.
- The **Maha Chaitya of Nagarjunakonda has a base in the form of Swastika, which is a sun symbol.**
- **Sungas, Kushans and Satavahanas**
- After the death of Ashoka, Mauryan dynasty came to an end and the **Sungas and Kushans ruled in the north and the Satavahanas in the south.**

- These dynasties made **advances in art and architecture** in areas like stone construction, stone carving, symbolism and beginning of temple (or chaitya hall) and the monastery (or vihara) constructions.
- The period between **2nd century B.C. and 3rd century A.D.** marked the beginning of the sculptural idiom in Indian sculpture where the elements of physical form were evolving into a more refined, realistic and expressive style.
 - **Under these dynasties the Ashokan stupas were enlarged and the earlier brick and wood works were replaced with stone-works.**
 - The **Sanchi Stupa was enlarged to nearly twice its size in 150 B.C.** and elaborate gateways were added later.
 - The **Sungas reconstructed the railings around the Barhut Stupa and built the toranas or the gateways.**
 - The Satavahanas constructed a large number of stupas at Goli, Jaggiahpetta, Bhattiprolu, Gantasala, Nagarjunakonda and Amravati.
 - **During the Kushan period, the Buddha was represented in human form instead of symbols.**
 - Buddha's image in endless forms and replicas became the principal element in Buddhist sculpture during the Kushan period.
 - The Kushans were the pioneers of the Gandhara School of Art and a large number of monasteries; stupas and statues were constructed during the reign of Kanishka.

15. Tidal currents

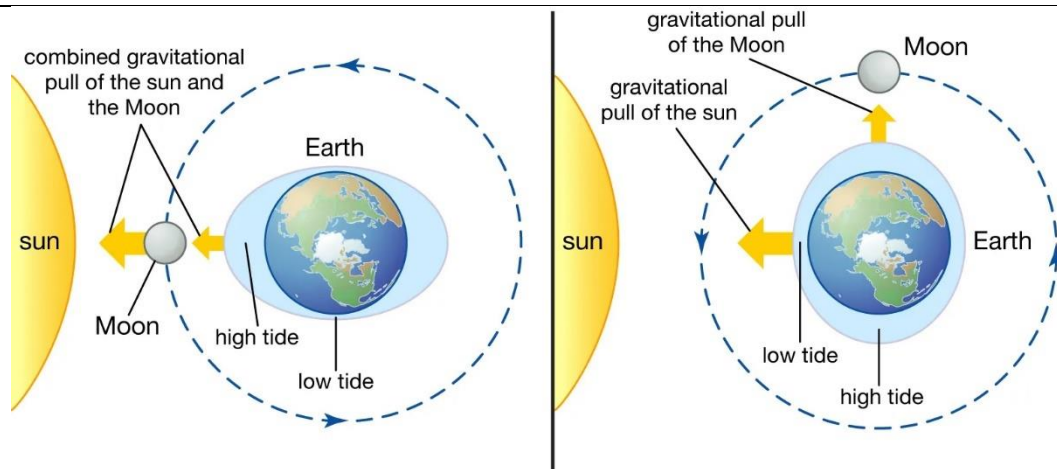
Tides are long-period waves that roll around the planet as the ocean is pulled by the moon's and sun's gravitational forces. They are the rise and

fall of sea levels caused by the combined effects of the gravitational forces exerted by the Moon, the Sun, and the rotation of the Earth.

Tides are driven primarily by the gravitational interaction between Earth and the Moon, with the Sun also playing a smaller but significant role.

Relationship Between Gravitational Forces and Tides

- The creation of tides involves a delicate interplay between the gravitational forces of the Earth, Moon, and Sun. While gravity acts to pull objects toward one another, the centrifugal force acts to push them apart.
- The Moon's gravitational pull is strongest on the side of the Earth that happens to be facing the Moon, causing the water in the oceans to bulge out in the direction of the moon. This creates a high tide. At the same time, another high tide occurs on the opposite side of the Earth due to the centrifugal force created by the Earth spinning on its axis. The areas in between these bulges experience low tide.
- The position of the Sun relative to the Moon and Earth also influences the tides.
- When the Moon and Sun align (at the new moon or full moon), their gravitational forces combine to create higher high tides and lower low tides, known as spring tides.
- When the Moon and Sun are at right angles to each other (first quarter and last quarter moon), their gravitational forces partially cancel each other out, resulting in neap tides, where the difference between high and low tides is smallest.



- **Tidal Currents**

- Tidal currents are the horizontal movement of water caused by the rising and falling of the tides. As the tide rises, water moves towards the coast, causing a "flood current."
- Conversely, as the tide falls, water moves back towards the sea, causing an "ebb current." In some locations, there is a period of little or no current at high or low tide, known as "slack water."

Types of Tides

- **Based on Frequency**

- Tides can be categorized based on their frequency:
- **Semi-diurnal Tides:** These occur twice daily and are common in the Atlantic Ocean. They result in two nearly equal high tides and two low tides each day.
- **Diurnal Tides:** These occur once daily and are common in some locations in the Gulf of Mexico and the western Pacific Ocean. They result in one high tide and one low tide each day.
- **Mixed Tides:** These occur twice daily and are common in the Pacific Ocean. They result in two unequal high tides and two unequal low tides each day.

A north-south cross-section through the Earth's center; the ellipse represents a meridian section through the tidal force envelope produced by the Moon.

Moon (at high declination)

Moon (directly over the equator)

Equator

Earth

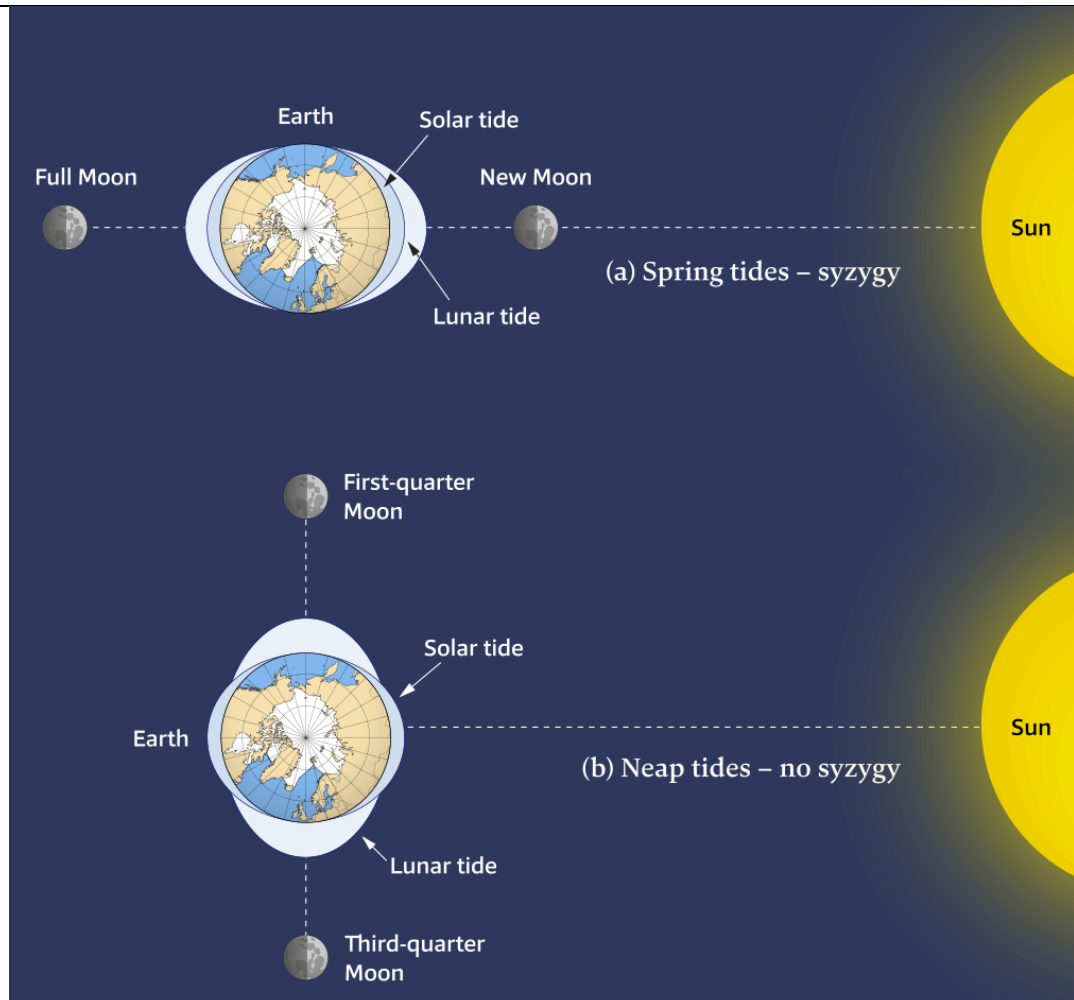
C' (Diurnal Tide)

(Mixed Tide)

(Semidiurnal Tide, Equatorial Type)

Based on the Sun, Moon, and Earth (SME) Position

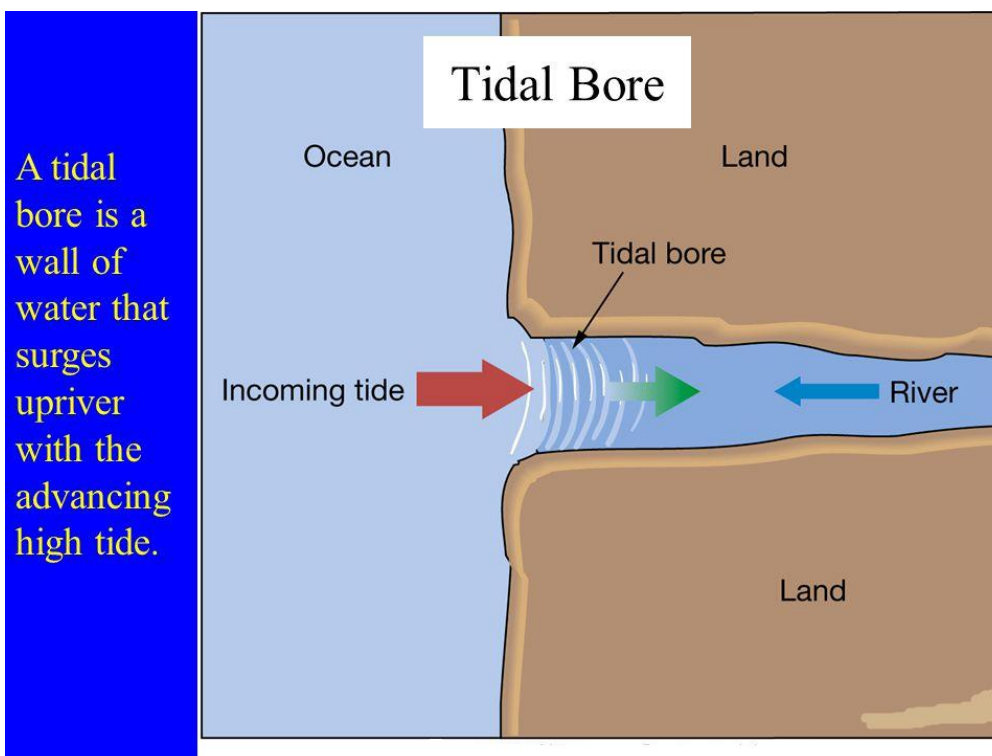
- Tides can also be categorized based on the relative positions of the Sun, Moon, and Earth:
- **Spring Tides:** Spring tides occur when the Sun, Moon, and Earth are aligned (during the full moon and new moon). The combined gravitational effect of the Moon and Sun leads to higher high tides and lower low tides.
- **Neap Tides:** Neap tides occur when the Sun and Moon are at right angles to each other (during the first and last quarter moon). The gravitational forces partially cancel each other out, resulting in less extreme tides.



Importance of Tides

- Tides have a significant impact on our planet and daily life. They influence coastal ecosystems, assist in navigation, influence human activities like fishing and surfing, and even have potential for renewable energy generation.
- **Ecological Importance:** Tides are crucial to the health of many coastal and marine ecosystems. They influence the distribution of organisms, nutrients, and oxygen in these ecosystems, and they create unique habitats like intertidal zones, which support a wide variety of life forms.
- **Navigation:** For hundreds of years, tides have played a crucial role in navigation. Knowledge of tides is essential for safe and efficient navigation, particularly in coastal waters.

- **Fishing and Recreation:** Tides can influence the best times for fishing and surfing. Certain fish are more active during particular tide stages, and tidal currents can create ideal wave conditions for surfing.
- **Renewable Energy:** Tidal movements hold potential for renewable energy generation. Tidal energy is predictable and can generate significant power. Tidal turbines and tidal barrage power plants are two examples of how we can harness this energy.
- Tides are a complex yet fascinating phenomenon resulting from the gravitational interactions between the Earth, Moon, and Sun. Their impact extends beyond the simple rise and fall of sea levels, influencing diverse ecological systems, human activities, and even renewable energy production.



- A tidal bore occurs along a coast where a river empties itself into an ocean or sea. It is a strong tide that pushes a river against its current. For the formation of tidal bore, specific conditions have to be met such as:

- The river emptying in the ocean must be fairly shallow.
 - The estuary formed by the river must be wide and flat.
 - The tidal range of the coast must be quite large- usually at least 6 m.
- Most notable example is the Qiantang River in China. Other examples are that of Batang river and Amazon River.
 - The tidal current is different from bores as tide and the associated currents are a fairly predictable phenomenon. However, formation of tidal bores requires meeting of very specific conditions. Also, bores can be quite destructive and lead to uprooting of vegetation, killing animals and swallowing surfers. The unpredictability also means that they are not very beneficial for harnessing energy.

Wobble Effect of Moon

- According to a recent study, the **Wobble effect of the Moon** is expected to lead to **more flooding** on Earth in the middle of the next decade.

Key Finding of Study:

- The study aimed to untangle all of those variables in an effort to improve predictions about the future of floods.
- Rising temperatures caused by greenhouse gas emissions are not the only cause of higher flood risks and the interplay of many variables that **push and pull at ocean levels is** also responsible.
- The study warned the wobble to **heighten high tides in the middle of the 2030s**, but it also showed that this prediction does not apply uniformly to every coastline everywhere.

Moon Wobble

- It is a **regular oscillation** that humans have known about for centuries.
- It is **one of many factors** that can either **exacerbate rising sea levels** or **counteract them**, alongside other variables like weather and geography.

- It was first documented way back in 1728.
- The wobble takes over an **6-year period to complete** and continues in a cyclic fashion.
- **Cause:**
- The high tides are caused mostly by the **pull of the moon's gravity** on a spinning Earth and on most beaches, causing **two high tides every 24 hours**.
- The moon also **revolves around the Earth** about once a month, and that orbit is a little bit tilted.
- The path of the moon's orbit seems to fluctuate over time, **completing a full cycle**(referred to as a nodal cycle) **every 18.6 years**.
- At certain points along the cycle, the **moon's gravitational pull** comes from such an angle that it yanks one of the day's two high tides a little bit higher, at the expense of the other.
- It does not mean that the moon itself is wobbling, nor that its gravity is necessarily pulling at our oceans any more or less than usual.
- The **high tide flooding** related to climate change is expected to break records with increasing frequency over the next decade.
- **Effects of wobble:**
- It could **cause high tide levels** at a beach to oscillate by 1 or 2 inches over the course of its long cycle.
- In half of this lunar cycle, Earth's regular daily tides are diminished, with high tides lower than usual and low tides higher than usual.
- In the cycle's other half, the situation is reversed, with high tides higher and low tides lower.
- The moon wobbles impact the gravitational pull of the moon, and therefore, indirectly influences the ebb and flow of tides here on the Earth.

- The lunar cycle is expected to shift again by mid-2030, and in the coming phase, the tides will amplify once again.

16. Features of Vedic Period

The Vedic Civilization, also known as the Vedic culture or the Vedic period, was a complex and varied civilisation that arose in ancient India between 1500 and 600 BCE. It was distinguished by the practice of Vedic religion and the composition of the Vedas, a collection of sacred texts that serve as the foundation of Hinduism.

- The Vedas are the source of a remarkable civilisation's integral wisdom, science, tradition, and culture. They are oral compilations of the distilled wisdom of cosmic knowledge that has survived since the beginning of time.
- They are recognised not only as scriptures but also as the source of Indian culture and human civilisation.
- The word **Veda** is derived from the root vid, which **means 'to know'**. The term Veda refers to the sacred knowledge contained in the Vedic texts.
- There are four Vedas: **Rigveda, Samaveda, Yajurveda, and Atharvaveda.**
- These four Vedas are also referred to as "**Samhitas**" as they represent the oral tradition of the time.

The Four Vedas

Rigveda

- Rigveda is the **oldest Veda.**
- It is divided into ten books (known as **mandalas**).
- It also includes Vishvamitra's famous Gayatri mantra and the **Purusha Shukta** prayer (the story of Primal Man).
- The **Rigvedic Priest was known as Hotri.**

	<p>- It is essentially a manual for the Adhvaryu priest, who was responsible for almost all ritualistic tasks in a sacrifice.</p> <p>Yajurveda</p> <p>- It is principally in prose form.</p> <p>- It has been divided into two sections: the earlier "black" and the more recent "white".</p> <p>Samaveda</p> <p>- The Samaveda is the shortest of all the four Vedas.</p> <p>- The Samaveda is a collection of Rigvedic verses organised in the form of poetry to facilitate singing.</p> <p>- The Samaveda is specially intended for the Udagatar priest.</p> <p>Atharvaveda</p> <p>- The Atharvaveda is a compilation of magical spells and charms that are used to ward off evil spirits and diseases.</p> <p>- The Atharva Veda is the latest and contains hymns (some from the Rig Veda).</p> <p>Each Veda has four parts: Samhitas, Brahmanas, Aranyakas, and Upanishads.</p> <p>Samhitas</p> <p>- The Samhitas are the most ancient part of the Vedas.</p> <p>- It contains mantras, prayers, litanies and hymns to God.</p> <p>Brahmanas</p> <p>- The Brahmanas are prose interpretations of the Samhita chapters.</p> <p>- It gives details and explanations of sacrificial rituals and their performance.</p> <p>Aranyakas</p> <p>- The Aranyakas are texts on forest life.</p> <p>- It interprets sacrificial rituals in a symbolic and philosophical manner.</p> <p>Upanishads</p> <p>- There are 108 Upanishads, 13 of which are considered the most important.</p> <p>- They contain a great variety of philosophical ideas about sacrificial universe.</p> <p>- They are most closely associated with the concepts of Atman and Brahman.</p> <p>Who were Vedic Aryans?</p> <ul style="list-style-type: none"> ▪ The Vedic Aryans were the authors of the Vedic hymns. Aryans were considered a race in the nineteenth century. Originally, the Aryans seem to have lived somewhere in the Steppes stretching from southern Russia to Central Asia.
--	---

- A group of them migrated from here to northwest India, where they were known as Indo-Aryans or simply Aryans.
- The Aryans are considered to represent a linguistic group speaking Indo-European languages. They are distinguished by traditional historians and archaeologists from the non-Aryan Harappans of the preceding period.
- **Migration of Aryans**
- Archaeologists have made attempts to link various post-Harappan cultures to the Aryans.
- The **Painted Grey Ware** has been repeatedly connected with **Aryan craftsmanship**.
- The archaeological evidence of migrations comes from the Andronovo Culture, which is located in southern **Siberia**. In the second millennium BC, this Culture flourished.
 - From here, people moved north of **Hindukush**, and from here, they entered India.
- **Development of Aryan Language:** The new people came in several batches, and one of the important results of this process of interaction was that the Vedic form of the **Aryan language** became predominant in the entire **Northwestern India**.
 - The texts written in this language are popularly known as the **Vedic Texts**.

Geographical Horizons of Vedic Aryans

- The early Vedic Aryans lived in the area known as **sapta-sindhu**, meaning an area of **seven rivers**.
- **This corresponds to the entire Punjab and its neighbouring Haryana regions, but Rigvedic geography also included the Gomal plains, southern Afghanistan, and southern Jammu and Kashmir.**

The **seven rivers included:**

- (i) **Sindhu,**
- (ii) **Vitasta** (Jhelum),
- (iii) **Asikni** (Chenab),

(iv) **Parushni** (Ravi),

(v) **Vipash** (Beas),

(vi) **Shutudri** (Sutlej),

(vii) **Sarasvati**.

- During the Later Vedic period, they gradually moved eastward and came to occupy eastern **U.P. (Kosala)** and north **Bihar (Videha)**.

- **Vedic Period (1500-600 BC)**

- In terms of literature, as well as social and cultural evolution, Vedic texts reflect two stages of development.
- The Rigvedic period, also known as the Early Vedic period, corresponds to the time when the Rigvedic hymns were composed, which was between 1500 BC and 1000 BC.
- The later stage, known as the **Later Vedic period**, is placed between **1000 BC and 600 BC**.
- **Sources of the Early Vedic Period**
- **Literary Sources:** literary sources refer to the **four Vedas:** Rigveda, Samaveda, Yajurveda and Atharvaveda. Out of these, the **Rigveda** is the earliest text.
 - The Rigvedic Samhita consists of up to ten books or "**Mandalas**," with books II to VII considered to be the earliest and belonging specifically to the Early Vedic Phase.

- **Archaeological Sources:** Excavations conducted in **Punjab, Uttar Pradesh**, and northern **Rajasthan**, along the **Indus and Ghaggar rivers** over the last 40 years, have unearthed many **post-Harappan/Chalcolithic settlements** from these regions.

- **Sources of the Later Vedic Period**

- **Literary Sources:** Books I, VIII, IX and X are considered later additions to the Rigvedic Samhita. The other Vedic texts assigned to the Later Vedic phase are the later additions, particularly the 10th Mandala of the Rigveda Samhita and the Samaveda, Yajurveda, and Atharvaveda Samhitas.

- **Archaeological Sources:** The literary sources repeatedly refer to the areas of **Western U.P., Haryana and Rajasthan.**
 - The Rigveda mentions "ayas," which might be referring to iron; however, archaeological evidence links iron to the Later Vedic period.
- **Political Life of the Vedic Period**
- There is no well-defined political hierarchy in the Early Vedic setup; however, changes during the period gave rise to a socio-political hierarchy, which manifested itself in the origin of the Varna system during the "Later Vedic phase". Early Vedic society was largely egalitarian and governed by tribal values and norms.

Features	Political Life of the Early Vedic Period	Political Life of Later Vedic Period
Social Unit	- The Aryans" chief social unit was known as Jana.	- The concept of janapada emerged. - In the Later Vedic texts, the word Rashtra was also used for the first time.
Chief/King	- Jana was headed by Rajan , whose main function was to protect the Jana and cattle from the enemies.	- The Rajan, or chief, now assumed the role of protector of the territory where his tribesmen had settled.
Post of Chief	- Not Hereditary and tribal assemblies were involved in the selection of the raja from amongst the clansmen.	- Hereditary and elaborate coronation rituals, such as vajapeya and rajasuya , established the chief authority.

	<p>- Rajan was helped in his task by the tribal assemblies called sabha, samiti, vidatha, gana and parishad, which are mentioned in the Rigveda.</p> <p>Sabha: council of select clan members</p> <p>Samiti comprised the whole clan.</p> <p>- The people gave the chief what is known as Bali.</p> <p>- It was simply a voluntary contribution made on special occasions by ordinary tribesmen.</p> <p>- The Sena, or army, was a temporary fighting force made up of able-bodied tribesmen who were mobilised during wartime.</p> <p>- The clans held large yajnas or sacrifices, which were performed by Purohita.</p> <p>- They received a large portion of the rajah's gifts and assumed a superior position in comparison to the other members of the clan.</p> <p>- During this time, the sabha overtook the samiti in relevance.</p> <p>- Bali, Bhaga and Shulka gradually assumed the form of regular tributes and taxes.</p> <p>- A rudimentary army emerged, and all these lived on the taxes offered by the people.</p> <p>- As Rajanya's importance grew, so did the Brahmanas.</p> <p>- The status of the officiating priests became at par with the gods in the later period.</p>
Administration	
Taxes	
Army	
Status of Brahmins	

- The officiating brahmana had to be satisfied with **Dana**.

Social Life of the Vedic Period

- The Early Vedic Period social structure, which was based on clan relations and was largely egalitarian, became much more complex in the later Vedic period. The early Vedic society was not divided on the basis of caste, while later, Vedic society was divided on the basis of the Varna system.

Features	Social Life of Early Vedic Period	Social Life of Later Vedic Period
Family	<ul style="list-style-type: none"> - The family belonged to a larger group known as a vis or clan. - One or more than one clan made Jana or tribe. - The Jana was the largest social unit. 	<ul style="list-style-type: none"> - The family continues to be the fundamental unit of Vedic society. - With three or four generations living together, the later Vedic families grew large enough to be called a joint family.
Varna System	<ul style="list-style-type: none"> - There was no varna system in the early Vedic period. 	<ul style="list-style-type: none"> - Four Varnas: The four varnas that came to divide society were the Brahmanas, Kshatriyas, Vaishyas, and Shudras.
Status of Women	<ul style="list-style-type: none"> - Despite the patriarchal nature of society, women played an important role in it. They had been educated and were entitled to the assemblies. 	<ul style="list-style-type: none"> - They were considered subordinate to men and were not involved in any major decision-making. - Their participation in public meetings was restricted. - Child marriages were becoming more common.

	<p>- Women poets: Apala, Viswavara, Ghosa, and Lopamudra.</p> <p>- They were free to choose their partners and could marry whenever they wanted.</p> <p>Varna-Ashrama</p> <p>- No such system was prevalent during the early Vedic period.</p> <p>- The texts mention three stages of life: Brahmacharya (student life), Grihastha (householder life), and Vanaprastha (hermitage).</p> <p>- Later on, sanyasa, the fourth stage, was added.</p> <p>- Together with varna, it came to be known as varna-ashrama dharma.</p> <p>- The growing need for more pasture lands and cattle contributed to an increase in inter and intra-tribal conflicts and warfare.</p> <p>Tribal Conflicts</p> <p>- Inter-tribal conflicts were frequent, an example being the battle of the Ten Kings mentioned in the Rigveda.</p> <p>- The nature of intra-tribal conflicts and conflicts within tribes also changed.</p> <p>- Fights were now for the acquisition of land.</p> <p>Gotra System</p> <p>- In early Vedic society, no such system was prevalent.</p> <p>- Gotra developed in this means that people having a common gotra descended from a common</p>
--	---

	<p>Marriage</p> <ul style="list-style-type: none"> - Marriage was typically monogamous, but chiefs occasionally practised polygamy. <p>Social Groups</p> <ul style="list-style-type: none"> - Occupation was not based on birth. - Varna, or colour, was used to distinguish between Vedic and non-Vedic people. <p>Religious Life of the Vedic Period</p> <ul style="list-style-type: none"> ▪ The hymns of the Rigveda reflect the religious ideas of the Vedic people. They revered the natural forces around them (such as wind, water, rain, thunder, fire, and so on) over which they had no control and invested nature with divinity conceived in human forms. <p>Features</p> <p>Religious Life of Early Vedic Period</p> <ul style="list-style-type: none"> - Indra, Agni, Varuna, Mitra, Dyaus, Pushana, Yama, Soma, etc are all male gods. - Many goddesses, such as Ushas, Sarasvati, and Prithvi, hold secondary positions in the pantheon. <p>Rigvedic Gods</p>	<p>ancestor, and no marriage between the members of the same gotra could take place.</p> <ul style="list-style-type: none"> - Despite the prevalence of polygamy, monogamous marriages were preferred. - The division of social groups was based on occupation alone, and society was still flexible, where one's occupation did not depend on birth. <p>Religious Life of Later Vedic Period</p> <ul style="list-style-type: none"> - Vishnu and Rudra, who were minor deities in the Rigveda, rose to prominence. - Pushan, who used to protect cattle, became the Shudra god.
--	---	---

	<p>- The most frequently mentioned god in the Rigveda is Indra.</p> <p>- In sacrifices, hymns and prayers were recited, and these yajnas were typically performed by priests.</p> <p>- The sacrificial ritual also resulted in the expansion and development of knowledge of mathematics and animal anatomy.</p> <p>Yajnas</p>	<p>- Important yajnas included ashvamedha, vajapeya, and rajasuya.</p> <p>- Toward the end of this period, a strong reaction against priestly dominance over the complexities of the yajnas led to the formulation of a philosophical doctrine that is laid out in the Upanishads.</p> <p>Economic Life of the Vedic Period</p> <ul style="list-style-type: none"> ▪ The Rigvedic hymns provide vast evidence of the significance of cattle in Vedic society. ▪ The word "gau," which means "cow," is the root of many other words. <ul style="list-style-type: none"> ▪ Cattle were the primary measure of wealth, and a wealthy man who owned many cattle was referred to as a "gomat." ▪ Conflicts and battles were referred to as gavishti, gavesana, gavyat, and other terms during this time period. ▪ The raja, or chief, is known as the "gopati," or one who protects cows. ▪ "Godhuli" is a term used in the Rigveda for a measure of time. ▪ Distance is called gavyuti. ▪ A daughter is referred to as a duhtri, or one who milks the cows. ▪ Kinship units are labelled as gotra. 		
	<p>Features</p>	<table border="0"> <tr> <td data-bbox="845 1890 1005 1960">Economic Life of the Early Vedic Period</td> <td data-bbox="1005 1890 1396 1960">Economic Life of Later Vedic Period</td> </tr> </table>	Economic Life of the Early Vedic Period	Economic Life of Later Vedic Period
Economic Life of the Early Vedic Period	Economic Life of Later Vedic Period			

	<p>Occupational Activity</p>	<ul style="list-style-type: none"> - The dominant occupational activity in pastoral society was cattle rearing. 	<ul style="list-style-type: none"> - Transformation from a pastoral to a sedentary agrarian society.
	<p>Agriculture</p>	<ul style="list-style-type: none"> - There are no other grains mentioned along with "Yava" or barley. - Shifting agriculture was practised. 	<ul style="list-style-type: none"> - Rice was the staple diet of the people. Rice is mentioned in the Vedic texts as Vrihi, Tandula, and Sali. - It appears that during this period, double cropping was also practised. - Aside from barley, people started growing wheat, rice, pulses, lentils, millet, sugarcane, and other crops.
	<p>Domestication of animals</p>	<ul style="list-style-type: none"> - Cattle, sheep, goats, and horses were raised for milk, meat, and hides. 	<ul style="list-style-type: none"> - The buffalo had been domesticated for agricultural purposes. - During this time, the God Indra was given the title "Lord of the Plough."
	<p>Taxes</p>	<ul style="list-style-type: none"> - The people gave the chief what was known as Bali, which was simply a voluntary contribution made by ordinary tribesmen on special occasions. 	<ul style="list-style-type: none"> - Bali, Bhaga and Shulka gradually assumed the form of regular tributes and taxes. - Bhagalugha: Tax collecting officer.

	<p>- There was no officer mentioned for tax collection.</p> <p>- They did not use iron technology and were familiar with copper.</p> <p>- Cows were the most popular means of exchange.</p> <p>- Priests were compensated with cows, horses, and gold ornaments for performing sacrifices.</p> <p>- Socketed axes made of iron and iron-tipped ploughshares and hoes increased the efficiency of agriculture.</p> <p>- In the later times, gold coins called Niskha were used in transactions.</p>
	<p>17. Wavell Plan</p> <p>The Wavell Plan was a proposal for Indian self-government that was introduced in 1945 at the Shimla Conference. The plan called for a new Executive Council with all Indian members, including separate representation for Muslims and other religious groups. However, the plan was ultimately unsuccessful because the Muslim League and the Indian National Congress could not agree on the terms of the plan.</p> <p><u>Genesis of the Wavell Plan</u></p> <p>Challenges Faced by the British Empire:</p> <ul style="list-style-type: none"> • During and after the Second World War, the British Empire encountered significant socioeconomic challenges, especially in maintaining control over its overseas colonies. • The war drained British resources and weakened its imperial power, making it difficult for the British government to continue ruling over its colonies, including India.

Desire to Grant India Freedom:

- In light of the post-war challenges and growing demands for Indian independence, the British government considered granting India the freedom it had long been seeking.
- The idea of India's independence gained traction, and the British authorities saw the need to find a resolution.

The End of World War II and INA's Actions:

- Although the war had come to an end, Japan had not yet surrendered during the early stages of the Wavell Plan's development.
- The actions of the Indian National Army (INA), which had engaged in heroic deeds during the war, were also a significant factor in the political landscape of India.

Stalemate in the Indian National Congress:

- Since the resignation of Congress ministries in 1939, there had been a political stalemate within the Indian National Congress, the leading political party in India at that time.
- The Congress' divisions and disagreements made it challenging to achieve a unified approach to the issue of India's self-governance.

Lord Wavell's Role:

- In October 1943, Lord Wavell, who had succeeded Lord Linlithgow as the Governor-General of India, attempted to break the political stalemate in India.
- He saw the need for a fresh approach to finding a solution to India's political future.

Consultations in England:

- In March 1945, Lord Wavell travelled to England for consultations with the British government on the matter of India's political situation.
- This trip aimed to seek advice and formulate a plan to address the deadlock in India.

Broadcast of the Wavell Plan:

- On June 14th, 1945, Lord Wavell broadcasted the British Government's proposals to the people of India, which came to be known as the Wavell Plan.
- The plan was an attempt to resolve the impasse and pave the way for India's political future.
- The Wavell Plan was an important step in the history of India's struggle for independence. It represented the British government's efforts to address the demands for self-governance and the need for a new approach to Indian political affairs in the aftermath of World War II. However, as events unfolded, the Wavell Plan faced challenges and did not lead to a conclusive resolution of India's quest for independence.

Proposals of the Wavell Plan

Increased Indian Representation in Executive Council:

- All members of the executive council, except the Governor-General and the Commander-in-Chief, were to be Indians. This aimed to give Indians greater say and responsibility in the governance of their country.

Equal Representation for Caste Hindus and Muslims:

- Caste Hindus and Muslims were to be represented equally in the reconstructed council. This was an attempt to address communal tensions and ensure fair representation for both major religious communities.

Interim Government within the Framework of the 1935 Act:

- The reconstructed council was intended to function as an interim government, operating within the framework of the Government of India Act of 1935. This meant that the council would not be accountable to the Central Assembly.

Governor-General's Veto Power:

- The Governor-General was to retain his veto power on ministerial advice, providing a safeguard against decisions that might be against the broader interests of India.

Joint List for Executive Council Nominations:

- Representatives from various political parties were encouraged to submit a joint list of nominees to the Viceroy for appointments to the executive council. This aimed to promote consensus and cooperation among different political groups.

Separate Lists and Negotiations:

- If a joint list was not feasible, parties were allowed to submit separate lists for nominations to the executive council. The plan also kept open the possibility of future negotiations on a new constitution once the war was won.

Representation for Scheduled Castes:

- The Scheduled Castes (Dalits) were to be represented separately in the executive council, acknowledging their unique concerns and interests.

Limited Use of Governor-General's Veto:

- While the Governor-General's veto power was not abolished, the plan sought to limit its excessive use, promoting a more collaborative approach to decision-making.

Transfer of External Affairs Portfolio:

- The Governor-General's portfolio of external affairs was to be transferred to an Indian member of the Council, giving India a greater role in handling foreign affairs.

Expectations of Provincial Ministers Returning to Office:

- The Wavell Plan anticipated that provincial ministers in the provinces would return to their offices, and a coalition government might be formed to facilitate effective governance.
- Congress Participation in Shimla Conference:
- The Congress leaders were invited and allowed to attend the Simla Conference in June 1945. This marked the end of a confrontational period that had lasted since August 1942, creating an opportunity for dialogue and negotiation.
- Despite the proposals put forward by the Wavell Plan, the Shimla Conference ultimately did not result in a successful resolution due to the failure of the Muslim League and the Indian National Congress to

reach a consensus. The plan and the conference had significant implications for India's political landscape and the path towards independence.

The Shimla Conference was a crucial event in India's struggle for independence and the implementation of the Wavell Plan. Here's a summary of the conference and its outcomes:

- **Objective and Participants:** The conference was convened in Shimla, the summer capital of the British Government, with 21 Indian political leaders in attendance. It aimed to discuss and reach an agreement on the provisions of the Wavell Plan for Indian self-government.
- **Key Leaders Present:** Maulana Abul Kalam Azad, the President of the Indian National Congress, and Mohammad Ali Jinnah, the leader of the All India Muslim League, were among the prominent leaders attending the conference.
- **Provisions of the Wavell Plan:** The plan proposed Indian self-rule with separate representation for Muslims, reducing majority powers for both communities in their majority regions.
- **The stalemate over Muslim Representation:** Talks at the conference hit a deadlock over the issue of selecting Muslim representatives. Jinnah demanded that only the Muslim League had the authority to represent Indian Muslims, leading to disagreements.
- **Demand for Two-Thirds Majority:** Jinnah insisted on adding a provision requiring a two-thirds majority to clear a vote in case of divided votes and Muslim members' objections.
- **Composition of the Executive Council:** Lord Wavell had appointed six Muslims to the Executive Council of 14 and had given them the power to veto any constitutional proposal not in their best interests.
- **Rejection of Unreasonable Demands:** The Muslim League's demands were considered unreasonable by the Indian National Congress, especially given that Muslims constituted only 25% of India's population.

- **Failure and Scrapping of the Plan:** The deadlock between the Congress and the Muslim League led to the failure of the conference. Lord Wavell concluded the talks as unsuccessful and eventually scrapped the Wavell Plan.
- **Lost Opportunity for a United India:** The Shimla Conference marked a lost opportunity for achieving a united, independent India, as it was possibly the last viable chance for a consensus between the major political parties.
- The failure of the Shimla Conference and the inability to reach an agreement on the Wavell Plan further deepened the political divide between the Indian National Congress and the Muslim League. The events that followed eventually led to the partition of India and the creation of two separate nations, India and Pakistan, in 1947.

Failure of Wavell Plan

The failure of the Wavell Plan can be attributed to several factors, including the entrenched positions of the Indian National Congress and the Muslim League, Lord Wavell's handling of the situation, and the broader political dynamics of the time. Here's a summary of the reasons behind the plan's failure:

- **Differing Views on Representation:** The Wavell Plan aimed to completely Indianize the Executive Council with equal representation for caste Hindus and Muslims. However, Mahatma Gandhi objected to the term "caste Hindus," and the Congress insisted on the election of representatives from all communities.
- **Stalemate between Congress and Muslim League:** The main parties, the Congress and the Muslim League, refused to compromise on their respective positions. The Congress viewed India as a single nation, while the Muslim League considered Muslims to be a separate nation.
- **Viceroy's Decision-making Power:** Lord Wavell's role as the Viceroy allowed him to make crucial decisions regarding the plan. He delegated the power of veto to Jinnah, effectively making him the sole representative of Muslims.

- **Reversal of Cripps Mission's Proposals:** Wavell's decision to reverse the Cripps Mission's proposals, which had identified the INC as the sole forum for discussion, created two platforms at the Shimla Conference, benefiting the Muslim League's position.
- **Lack of Trust in Leaders:** Lord Wavell should have trusted the leaders with the composition of the Executive Council. His decision to let the Muslim League effectively veto the entire plan obstructed progress and led to the breakdown of the conference.
- **Strengthening the Muslim League:** The failure of the Shimla Conference bolstered Jinnah and the Muslim League, as seen in the 1945-46 elections.
- **Blame and Lack of Sympathy:** Congress President Maulana Azad laid the blame on Jinnah for the breakdown of the conference. The following year, during the Cabinet Mission, Congress was less sympathetic to the Muslim League's requests.

Conclusion:

- In conclusion, the Wavell Plan's failure can be attributed to the inability of Congress and the Muslim League to find common ground on representation and the political dynamics at play during that time. The breakdown of the conference had significant implications for India's political future and set the stage for further negotiations and events leading to the eventual partition of India.
- The Wavell Plan was an earnest effort by Lord Wavell to find a solution to the political impasse in India and pave the way for Indian self-government. However, the plan's failure was rooted in the deep-seated differences and irreconcilable positions between the Indian National Congress and the Muslim League.
- Despite Lord Wavell's attempts to promote equal representation and foster dialogue, the Congress and the Muslim League remained steadfast in their opposing stances on issues of communal representation and the concept of a united India versus a separate Muslim nation. This lack of agreement and mutual understanding

ultimately led to the dissolution of the proposals at the Shimla Conference.

- The failure of the Wavell Plan at the Shimla Conference marked a crucial turning point in India's struggle for independence. It further solidified the divide between the Congress and the Muslim League and set the stage for subsequent events that eventually culminated in the partition of India in 1947.
- Though the Wavell Plan did not succeed in its original form, the conference and the plan played a significant role in shaping the course of India's political future. They underscored the complexities and challenges in finding a unified solution to India's quest for self-rule and independence, while also highlighting the deep-seated divisions and differing visions of India's political leaders during that crucial period.
- Overall, the Wavell Plan's failure serves as a reminder of the complexities involved in the struggle for independence and the need for mutual understanding and compromise among India's diverse political forces to achieve a united and free nation.

18. Project Cheetah – Prospects and Challenges

- India's ambitious Cheetah reintroduction programme **Project Cheetah** completed one year on 17th September 2023. Project Cheetah is India's ambitious cheetah relocation program aimed at establishing a self-sustaining population of about 35 cheetahs in the country over the next decade. However the Project has faced several criticisms with the death of 9 cheetahs (6 adults and 3 cubs) out of the 20 translocated cheetahs from Namibia and South Africa.

Project Cheetah

- **Project Cheetah**-Project Cheetah is the **world's first intercontinental large wild carnivore translocation project**. The project aimed at the reintroduction of Cheetahs in the country which had become extinct in 1950s in the country.
- **Status of Project-**

Incoming Cheetahs	Status of Cheetahs	Future Action
<p>First batch- 8 cheetahs from Namibia arrived on September 17, 2022 at Kuno Palpur National Park.</p> <ul style="list-style-type: none"> Second batch-12 cheetahs from South Africa arrived on February 18, 2023 at Kuno Palpur National Park. *In late March 2023, one of the females gave birth to a litter of four cubs 	<p>6 Cheetahs have died. 14 cheetahs are remaining. All the surviving 14 adult cheetahs and one cub are in captivity</p> <ul style="list-style-type: none"> *3 of the 4 cubs have died and 1 cub is being hand reared as the mother has rejected it. 	<ul style="list-style-type: none"> There is talk of them being radio-collared again and released once the winter sets in. The project authorities are talking of additional sites being prepared for releasing the cheetahs such as the Gandhi Sagar Wildlife Sanctuary and Nauradehi Wildlife Sanctuary, both in Madhya Pradesh.

which were
conceived
in India.

Historical Timeline of Project Cheetah

- **Earliest historical references of Cheetahs in India:**
 - They are found in classical Greek records of India, from Strabo, about 200 years before the Common Era.
 - In the **Mughal Period**, cheetahs were used very extensively for hunting. Emperor Akbar had 1,000 cheetahs in his menagerie.
 - Central India, particularly the Gwalior region, had cheetahs for a very long time. Various states including **Gwalior and Jaipur** used to hunt cheetahs.
- **Extinction of Cheetahs:**
 - The country's last spotted cheetah died in Sal forests of Chhattisgarh's Koriya district in 1948 and the **wild animal was declared extinct in the country in 1952.**
 - Maharaja Ramanuj Pratap Singh, the ruler of a small princely state in today's Chhattisgarh shot India's last 3 surviving cheetahs.
- **1st plan to reintroduce the cheetah**-First solid steps were taken in the 1970s, during negotiations with **Iran**, then under **Shah Muhammad Reza Pahlavi**. Iran's cheetahs were Asiatic, like India's extinct animals. **The plan was to exchange Asiatic lions for Asiatic cheetahs.**
- **2009**-Another attempt to source **Iranian Cheetahs** was made in 2009 without success. Iran would not permit even cloning of its Cheetahs.
- **2012**-Supreme Court ordered a **stay on the reintroduction project.**

- **2020**-South African experts visited four potential sites: **Kuno-Palpur, Nauradehi Wildlife Sanctuary, Gandhi Sagar Wildlife Sanctuary and Madhav National Park.**
- **2022**- Project Cheetah was officially launched by the Prime Minister.

Significance of Project Cheetah

Environmental Significance

- **Biodiversity restoration**-Reintroduction of cheetahs helps in restoring the natural balance of the ecosystem by **reintroduction of a top predator** in the food chain. Cheetahs will help in the **restoration** of open forestland grassland ecosystems in India and enhances the ecosystem services like water security, carbon sequestration and soil moisture conservation.
- **Conservation efforts of other species**-The success of Project Cheetah can serve as a **model for the reintroduction of other critically endangered species** which can motivate conservationists and governments to pursue similar efforts for other endangered species like the **Great Indian Bustard.**
- **Ecological research opportunities**- Reintroduction of cheetahs provides unique opportunity for scientists to **study cheetah behaviour and ecology** in a new environment.

Economic Significance

- **Enhancement of tourism**- The presence of cheetahs in Indian national parks **boosts wildlife tourism** and generates revenue. This has led to job creation like **Cheetah Mitras** and has benefited communities living around national parks and wildlife reserves by increasing their sources of income.

Social Significance

- **Social awareness about conservation**- Debates on success of Project Cheetah has **raised public awareness** about wildlife conservation and the importance of protecting endangered species.

- **Socio-cultural significance-** The reintroduction of cheetahs have also helped in **reviving their cultural importance** in India, as Cheetahs have historically been symbols of strength and agility in Indian mythology and folklore.

What are the possible reasons behind high cheetah mortality in Project Cheetah?

- There has been death of 6 Cheetahs and 3 cubs which have highlighted the Drawbacks in the implementation of Project Cheetah.
- **Improper implementation of Livestock Importation Act 1898-** According to the Livestock Importation Act 1988 the **prescribed time period of quarantine of animals is 30 days**. However there was delay in release of Cheetahs from their quarantine. Cheetahs were released after 60 days of quarantine. This **prolonged confinement of cheetahs in quarantine** has had adverse effects on their ability to adapt and has led to psychological adjustment issues.
- **Improper Scientific Assessment-**The Action Plan of Project Cheetah mandated scientific assessment to establish the prevalence of **potential carnivore pathogens/diseases** at the release sites. Critics point to the lack of scientific assessment report in public domain. Also the three cheetah deaths have been attributed to **native pathogens**.
- **Improper Verification of Cheetahs selected for Translocation-** Action Plan of Cheetah Relocation laid down detailed guidelines for proper verification of Cheetahs for their relocation. However critics point to the laxity in following the detailed Verification guidelines as the cause of death of the first Cheetah has been attributed to **pre-existing renal disease**.
- **Improper implementation of stated release procedure-** The Action Plan of Cheetah reintroduction laid down proper guidelines for the **quarantine compartments of male-female, radio collaring and stated release procedure**. However the timelines prescribed and stated release procedures were not properly implemented.

Cheetah:

- The cheetah, *Acinonyx jubatus*, is one of the oldest of the big cat species.
- The cheetah is also **the world's fastest land mammal**.
- It is listed as **vulnerable** in IUCN red listed species
- The country's last spotted feline died in **Chhattisgarh in 1947**. Later, the cheetah was **declared extinct in India in 1952**
- The **Asiatic cheetah is classified as a "critically endangered" species** by the IUCN Red List, and is believed to survive only in Iran.
- Now they are being reintroduced to the **Kuno-Palpur Wildlife Sanctuary**, Madhya Pradesh

Classification of Cheetah:

Parameter	African Cheetah	Indian Cheetah
IUCN status	Vulnerable	Critically endangered
Numbers	Around 6500-7000	Only 40-50 found in Iran
Physical characteristics	Bigger in size than the Asian cheetah	Smaller and paler than African cheetah and looks more like a cat with smaller head and longer neck

Challenges being faced by Project Cheetah

- **Less protected area available for thriving Cheetah Population-** Cheetahs are a low-density species with **1-2 Cheetahs existing in 100 sq kms**. Thus the newly introduced cheetahs will need about **5,000 sq km of good-quality habitat** to establish a viable population in India.

The country currently does not have this extent of habitat for the cheetahs.

- **Less Prey availability-** Experts have raised concerns about the cheetahs travelling **large distances to roam and hunt** which is not optimal in the current environment for their long-term survival.
- **Fragile Creatures-** Unlike tigers and leopards, Cheetahs are comparatively fragile creatures and are more **prone to sustaining fatal injuries** in the wild.
- **Climate change impacts-** Adapting to the impacts of climate change on the habitat and prey availability have posed challenges for the cheetah population's long-term survival.
- **Inter Species Competition-** Tigers from the **Ranthambore Tiger Reserve** in Rajasthan, 140 km away from Kuno, migrate to the park. The proximity of these predators in the same ecosystem has also posed a serious challenge for Project Cheetah.
- **Genetic Differences-** Many experts have expressed concerns over reintroduction of African Cheetahs instead of Asiatic cheetahs. They believe that **Asiatic cheetahs** would have been a **more suitable choice** considering historical survival of species in the region and their ability to quickly acclimatize.

Road ahead

- **Improvement of health monitoring-** Regular health checks and early detection of health issues can help prevent deaths like **Sasha's from kidney disease** and gastritis.
- **Strengthening collaboration-** Enhancement of cooperation between Indian authorities, international conservation organizations and experts to **share knowledge and best practices** for cheetah reintroduction.
- **Coordination with other countries-** Collaboration with countries like **South Africa and Namibia** to exchange knowledge and best practices in cheetah conservation.
- **Expansion of habitat area-** Preparation of additional sites for release of the cheetahs such as the **Gandhi Sagar Wildlife Sanctuary and**

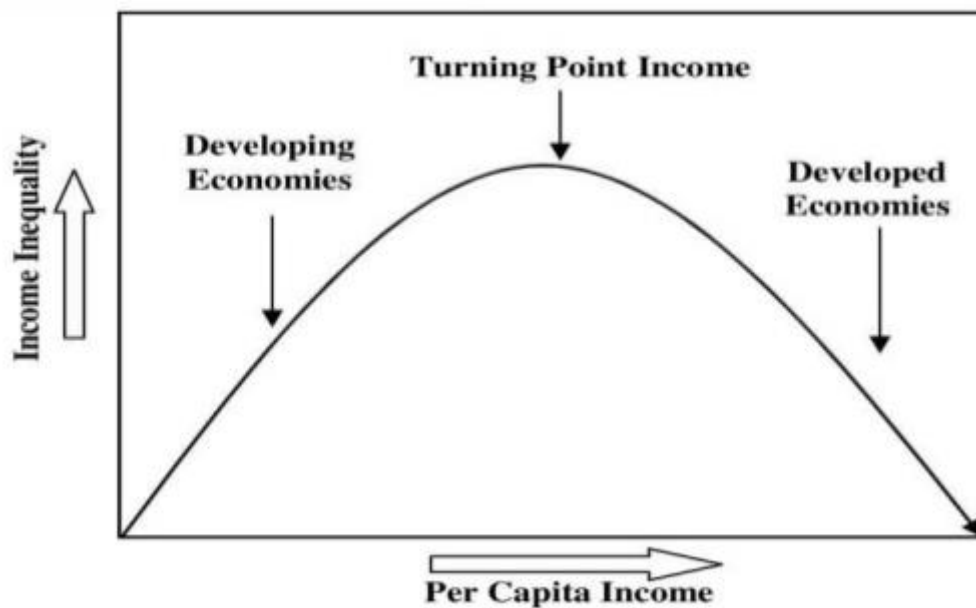
Nauradehi Wildlife Sanctuary so as to increase their habitat and prey areas.

- **Establishment of a long-term monitoring plan-** Development of a **comprehensive plan** to monitor the cheetah population, track their movements and evaluate the overall success of the reintroduction project.
- **Encouraging community based conservation-** Involvement of **local communities** in conservation efforts by providing economic incentives and opportunities for sustainable development such as ecotourism or community-led wildlife management.
- Government has initiated efforts in removing the anomalies of Project Cheetah by constituting a 11 member task force under the chairmanship of **Rajesh Gopal**. Success of Project Cheetah will be a landmark success for conservation efforts in India.

19. ECONOMIC CURVES

I. Kuznets Curve

- Kuznets Curve is used to demonstrate the hypothesis that economic growth initially leads to greater inequality, followed later by the reduction of inequality. The idea was first proposed by American economist Simon Kuznets.
- As economic growth comes from the creation of better products, it usually boosts the income of workers and investors who participate in the first wave of innovation. The industrialisation of an agrarian economy is a common example. This inequality, however, tends to be temporary as workers and investors who were initially left behind soon catch up by helping offer either the same or better products. This improves their incomes.



II. Lorenz Curve

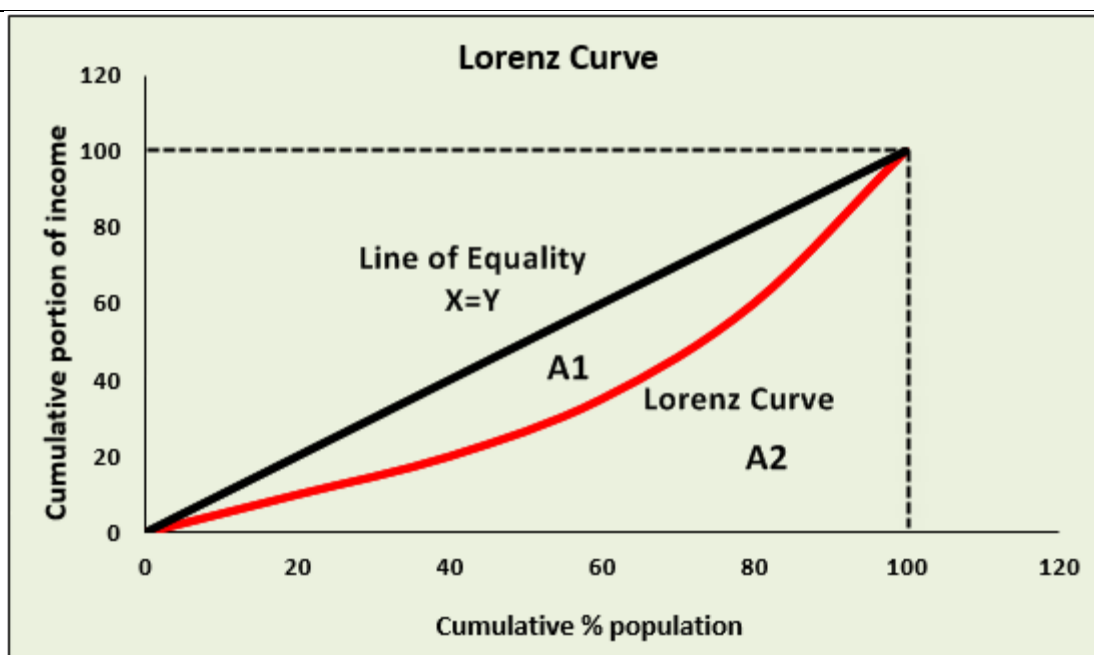
- The Lorenz curve is a way of showing the distribution of income (or wealth) within an economy. It was developed by Max O. Lorenz in 1905 for representing wealth distribution.
- The Lorenz curve shows the cumulative share of income from different sections of the population.
- If there was perfect equality – if everyone had the same salary – the poorest 20% of the population would gain 20% of the total income. The poorest 60% of the population would get 60% of the income.
- The Lorenz Curve can be used to calculate the Gini coefficient – another measure of inequality.
- Example of Lorenz Curve
- Following is the example to understand the Lorenz curve with the help of a graph.
- Let us consider an economy with the following population and income statistics:

Population %	Income Portion %
0	0
20	10
40	20
60	35
80	60
100	100

And for the line of perfect equality, let us consider this table:

Population %	Income Portion %
0	0
20	20
40	40
80	80
100	100

Let us now see how a graph for this data actually looks:



- As we can see, there are two lines in the graph of the Lorenz curve, the curved red line, and the straight black line.
- The black line represents the fictional line called the line of equality i.e. the ideal graph when income or wealth is equally distributed amongst the population.
- The red curve, the Lorenz curve, which we have been discussing, represents the actual distribution of wealth among the population.
- Hence, we can say that the Lorenz curve is the graphical method of studying dispersion.
- Lorenz Curve can be used to calculate **Gini Coefficient**.
- The Lorenz curve is the **Visual Indicator** and
- The Gini Coefficient is the **Mathematical Indicator**.

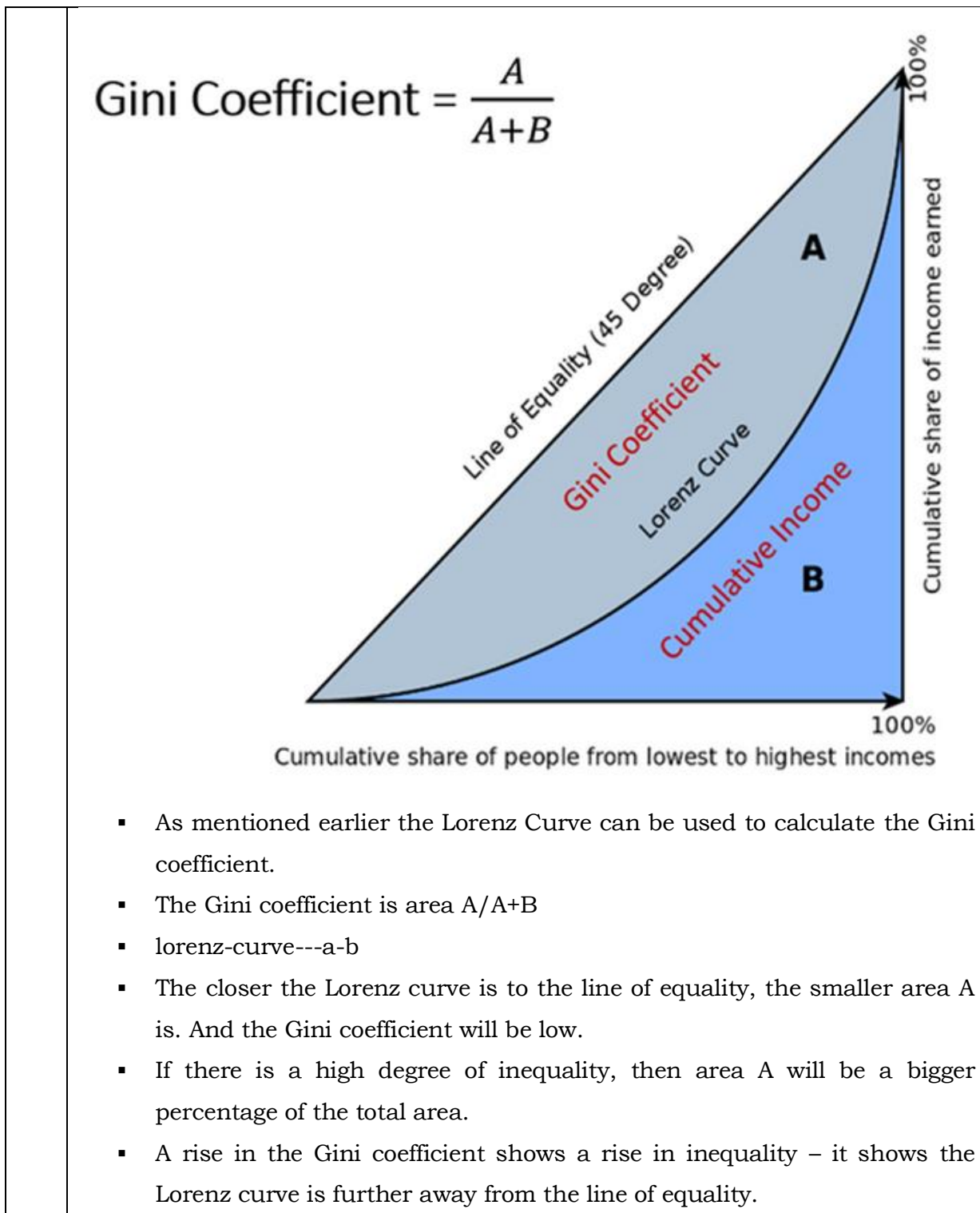
Uses of the Lorenz Curve

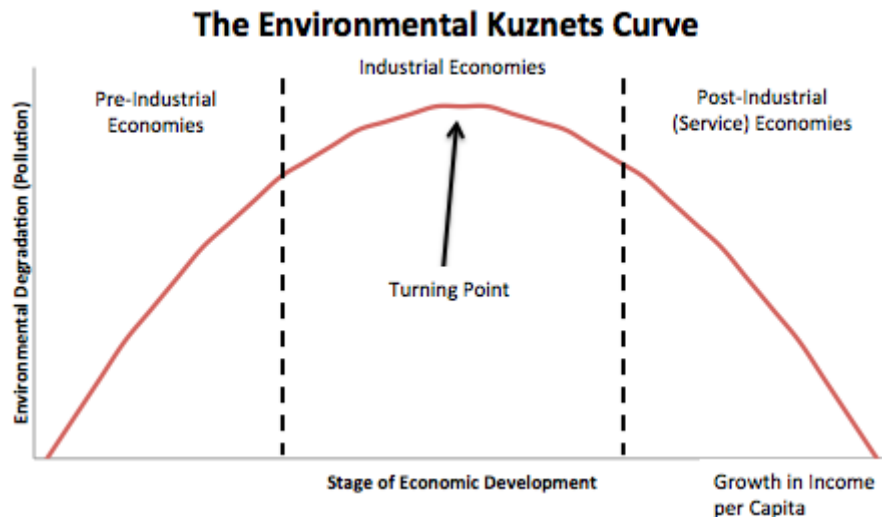
- It can be used to show the effectiveness of a government policy to help redistribute income. The impact of a particular policy introduced can be shown with the help of the Lorenz curve, how the curve has moved closer to the perfect equality line post-implementation of that policy.
- It is one of the simplest representations of inequality.

- It shows the distribution of wealth of a country among different percentages of the population with the help of a graph which helps many businesses in establishing their target bases.
- It helps in business modeling.
- It can be used majorly while taking specific measures to develop the weaker sections in the economy.

Gini Coefficient

- The Gini-coefficient is a statistical measure of inequality that describes how equal or unequal income or wealth is distributed among the population of a country. It was developed by the Italian statistician Corrado Gini in 1912. The coefficient ranges from 0 (or 0%) to 1 (or 100%), with 0 representing perfect equality and 1 representing perfect inequality. Values over 1 are theoretically possible due to negative income or wealth.





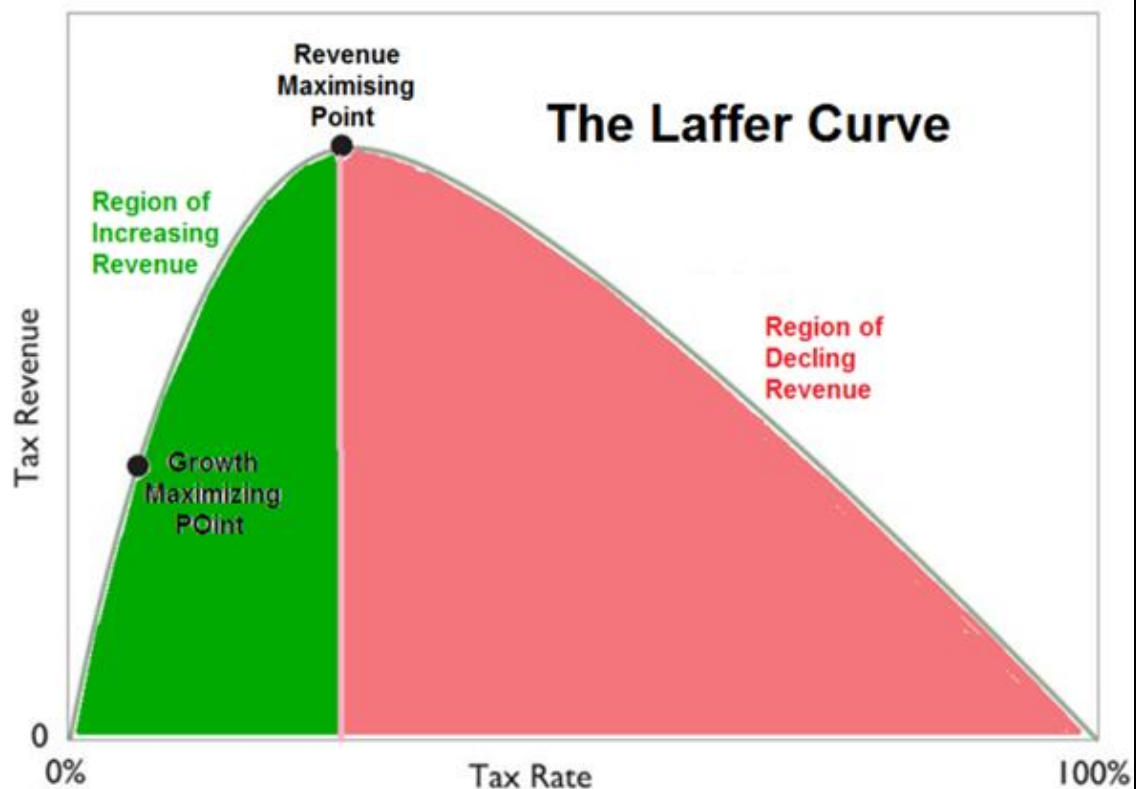
- The environmental Kuznets curve suggests that economic development initially leads to a deterioration in the environment, but after a certain level of economic growth, a society begins to improve its relationship with the environment and levels of environmental degradation reduces.
- From a very simplistic viewpoint, it can suggest that economic growth is good for the environment.

III. **Laffer Curve**

- The Laffer Curve states that if tax rates are increased above a certain level, then tax revenues can actually fall because higher tax rates discourage people from working. The Curve was developed by economist Arthur Laffer to show the relationship between tax rates and the amount of tax revenue collected by governments. The curve is used to illustrate Laffer's argument that sometimes cutting tax rates can increase total tax revenue.
- Laffer Curve states that cutting taxes could, in theory, lead to higher tax revenues.
- It starts from the premise that if tax rates are 0% – then the government gets zero revenue.
- Equally, if tax rates are 100% – then the government would also get zero revenue – because there is no point in working.
- If tax rates are very high, and then they are cut, it can create an incentive for business to expand and people to work longer. This boost

to economic growth will lead to higher tax revenues – higher income tax, corporation tax and VAT.

- The importance of the theory is that it provides an economic justification for the politically popular policy of cutting tax rates.

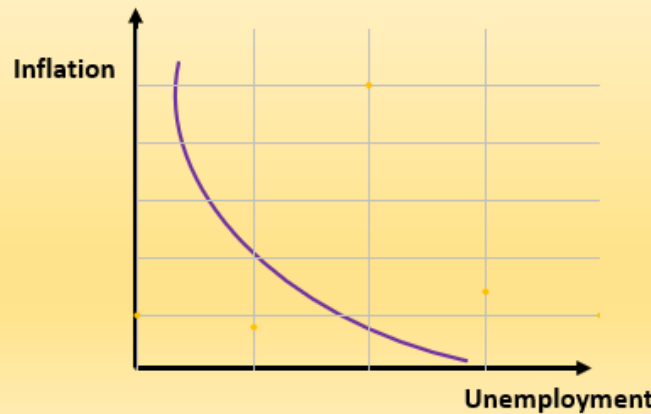


IV. Phillips Curve

- The Phillips curve is an economic concept developed by **A. W. Phillips**. It states that **inflation and unemployment have a stable and inverse relationship**. The theory claims that with economic growth comes inflation, which in turn should lead to more jobs and less unemployment. However, the original concept has been somewhat disproven empirically due to the occurrence of stagflation in the 1970s, when there were high levels of both inflation and unemployment.

Phillips Curve

When presented or graphically charted, the inverse relationship between inflation & unemployment rate is called as Phillips Curve.



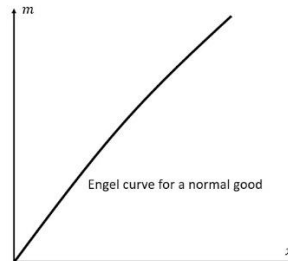
- The Phillips curve states that inflation and unemployment have an inverse relationship. Higher inflation is associated with lower unemployment and vice versa.³
- The Phillips curve was a concept used to guide macroeconomic policy in the 20th century, but was called into question by the stagflation of the 1970"s.
- Understanding the Phillips curve in light of consumer and worker expectations, shows that the relationship between inflation and unemployment may not hold in the long run, or even potentially in the short run.

V. Engel curve

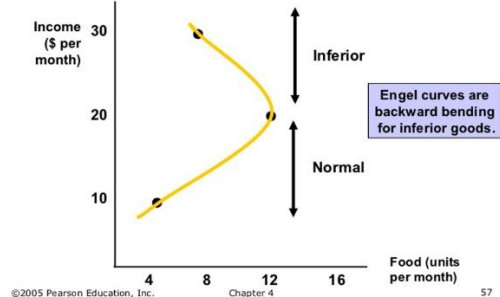
- The Engel curve describes how the spending on a certain good varies with household income. The shape of an Engel curve is impacted by demographic variables, such as age, gender, and educational level, as well as other consumer characteristics.

Engel curve

- An *Engel curve* show the relationship between optimal choice of a good and income



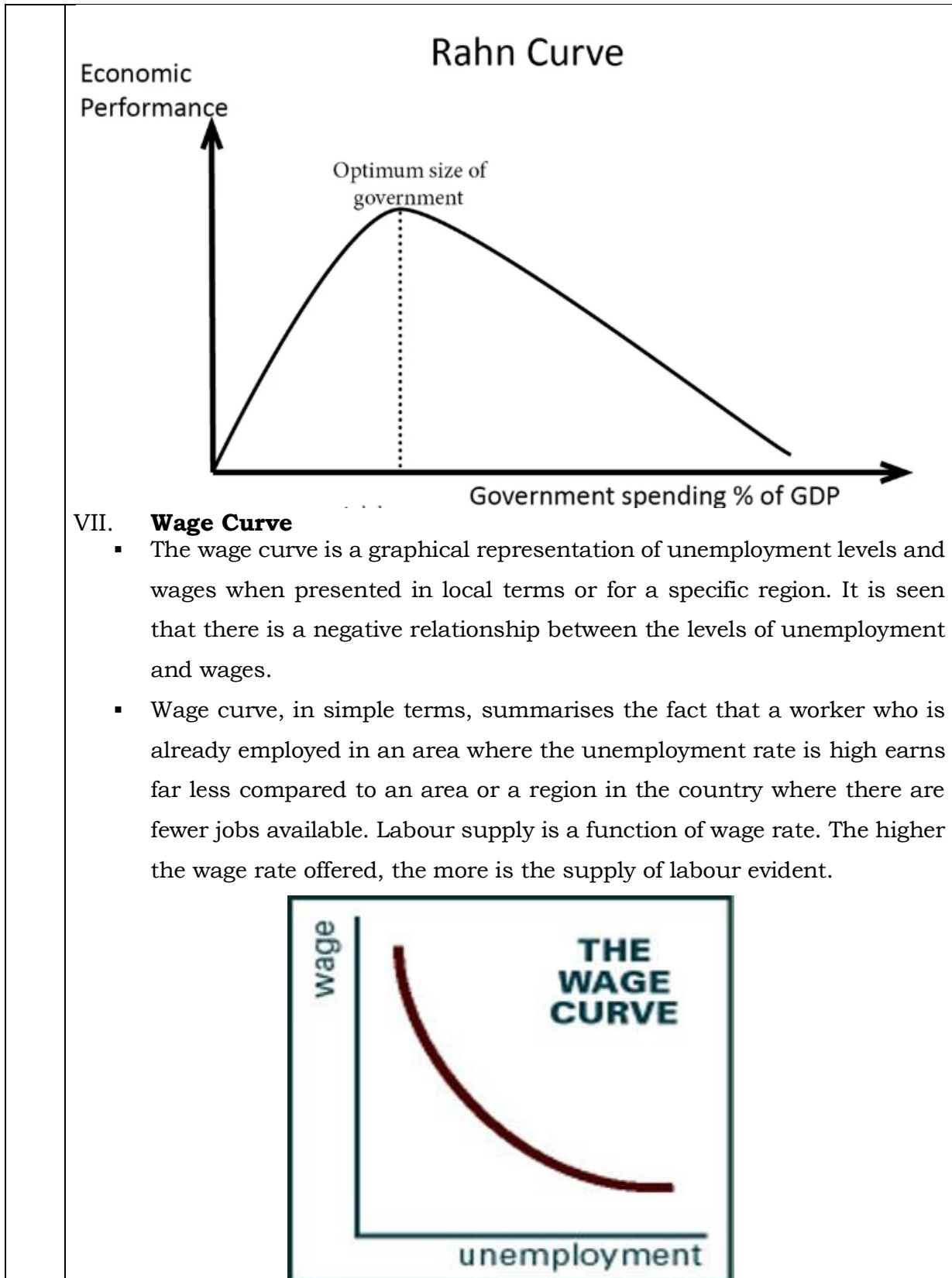
Engel Curves



- The Engel curve also varies for different types of goods. With income level as the x-axis and expenditures as the y-axis, the Engel curves show upward slopes for normal goods, which have a positive income elasticity of demand. Inferior goods, with negative income elasticity, assume negative slopes for their Engel curves. In the case of food, the Engel curve is concave downward with a positive but decreasing slope.

VI. Rahn Curve

- The Rahn Curve suggests that there is an optimal level of government spending which maximises the rate of economic growth. Initially, higher government spending helps to improve economic performance. But, after exceeding a certain amount of government spending, government taxes and intervention diminishes economic performance and growth rates.



- This happens because it gives an individual the incentive to work for some extra hours if the need arises. Under normal circumstances, a labourer for a specific task gets Rs 100/hr. This is the wage rate at a time when there is no shortage of work and the workforce is available even for working some extra hours. Let's assume a scenario where there are not many jobs in the labour market.
- The unemployment rate is high, which means that lot of people who want to work are underemployed. In this situation the prevailing wage rate would be much less than what a person earns under normal circumstances, which is Rs 100/hr.
- Due to the high level of unemployment, the current rate is much less than Rs 100 per hour. The person who is employing can now hire more labourers to perform a set of tasks because there is excess supply in the region.
- To sum up, when there is less unemployment and fewer labourers available to work on a specific task, the wages then for that given task turns higher. On the other hand, high unemployment with a sizeable number of labourers, wanting to work, eventually leads to lower wages.

VIII. Beveridge curve

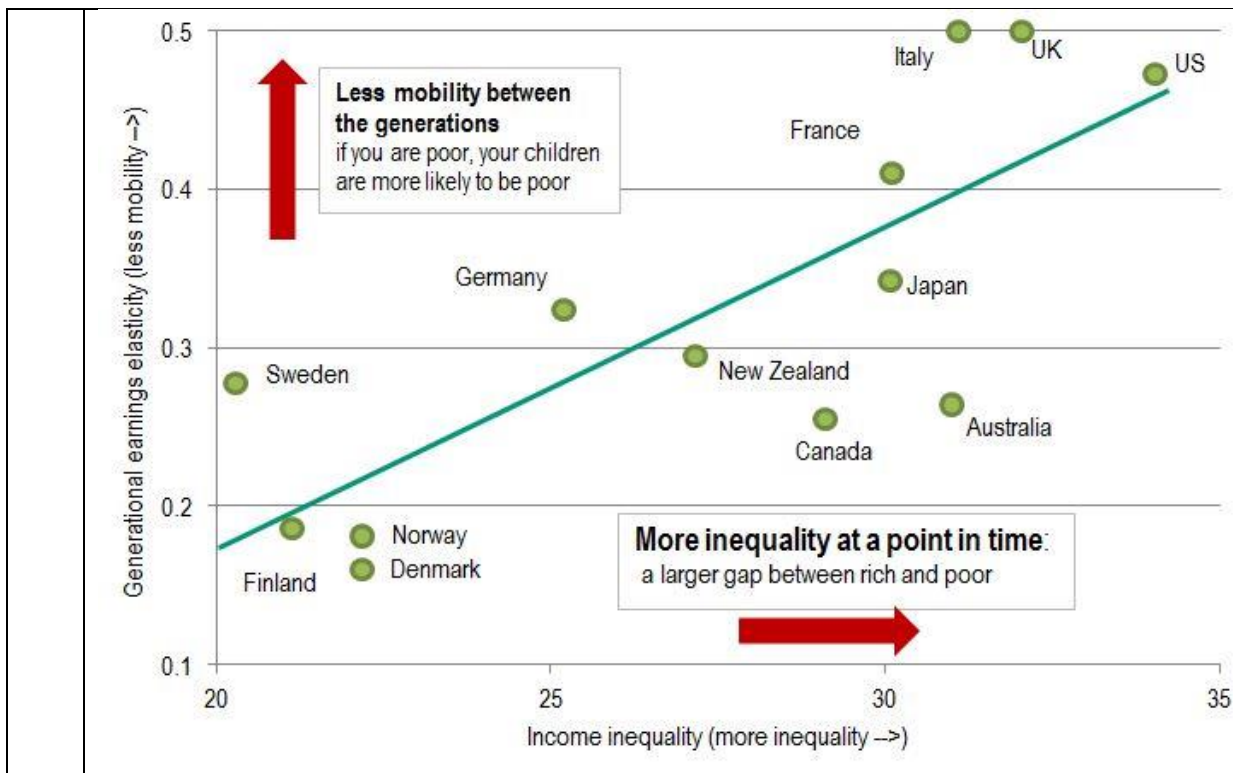
This refers to a graphical representation that shows the relationship between the unemployment rate (on the horizontal axis) and the job vacancy rate (on the vertical axis) in an economy. It is named after British economist William Beveridge.



- The Beveridge curve usually slopes downwards because times when there is high job vacancy in an economy are also marked by relatively low unemployment since companies may actually be actively looking to hire new people. By the same logic, a low job vacancy rate usually corresponds with high unemployment as companies may not be looking to hire many people in new jobs.

IX. **Great Gatsby Curve**

- The "Great Gatsby Curve" describes the relationship between current income inequality and how hard it is for children to move up the economic ladder relative to their parents.



- Countries with high income inequality tend to have low upward economic mobility, which can affect the opportunity for future generations to move up the social ladder.
- The "Great Gatsby Curve" was made famous by Alan Krueger, late economist and former chairman of the Council of Economic Advisers.
- Krueger expanded upon research about the association between a country's income inequality and the relationship between children's and their parents' income.
- Nordic countries that have low inequality and low elasticity fall at the bottom of the curve.

X. **Offer Curve**

- In economics and particularly in international trade, an offer curve shows the quantity of one type of product that an agent will export ("offer") for each quantity of another type of product that it imports. It is because of this reason that the offer curve is known also as the reciprocal demand curve. The offer curve was first derived by English economists Edgeworth and Marshall to help explain international trade.

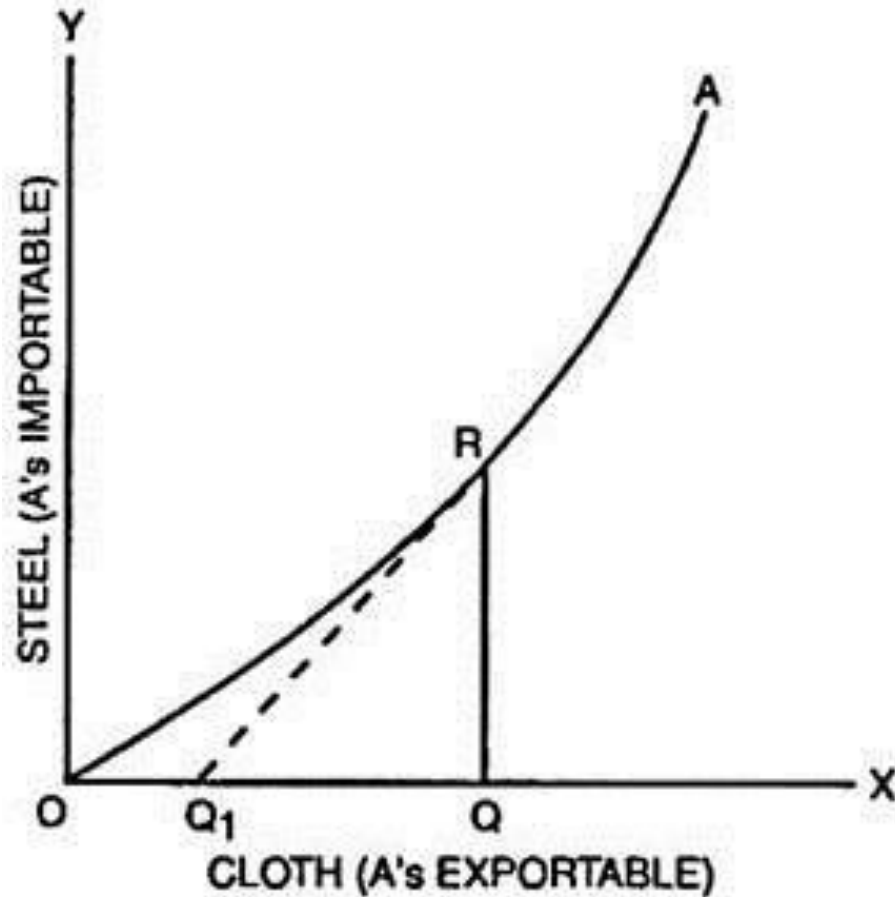


Fig. 4.7

XI. J Curve

- The J Curve is an economic theory which states that, under certain assumptions, a country's trade deficit will initially worsen after the depreciation of its currency—mainly because higher prices on imports will be greater than the reduced volume of imports.

J-curve

The graph shows the relationship between the current account balance and time following a currency depreciation. The vertical axis represents the current account balance, with positive values (+) above the horizontal axis and negative values (-) below it. The horizontal axis represents time following a currency depreciation. The curve starts at point X, which is on the negative axis, indicating an initial trade deficit. It then dips to a minimum at point Y, representing the worst of the trade deficit. Finally, it rises to cross the horizontal axis at point Z, indicating a rebound and a return to a trade surplus.

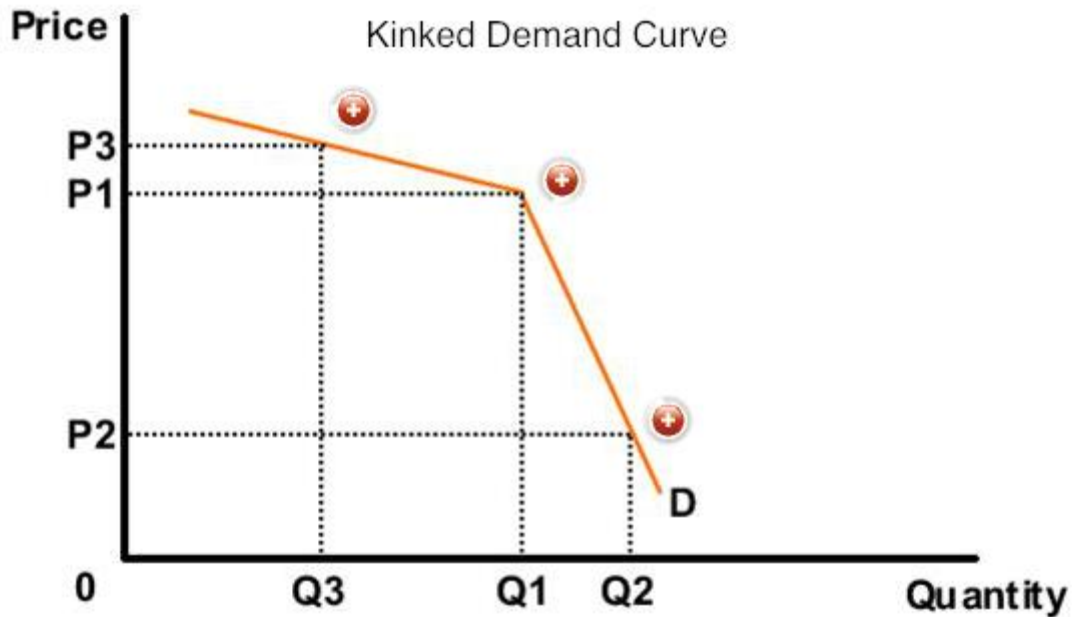
- The J Curve is an economic theory that says the trade deficit will initially worsen after currency depreciation.
- Then the response to the curve, which is to an increase in imports as exports remain static, is a rebound, forming a “J” shape.
- The J Curve theory can be applied to other areas besides trade deficits, including in private equity, the medical field, and politics.

XII. **Kinked Demand Curve**

- The kinked demand curve of oligopoly was developed by **Paul M. Sweezy** in 1939. The model explains the behavior of oligopolistic organizations. It advocates that the behavior of oligopolistic organizations remain stable when the price and output are determined.

An **oligopoly** is a market form wherein a market or industry is dominated by a small group of large sellers (oligopolists). Oligopolies can result from various

forms of collusion that reduce market competition which then typically leads to higher prices for consumers. Oligopolies have their own market structure.

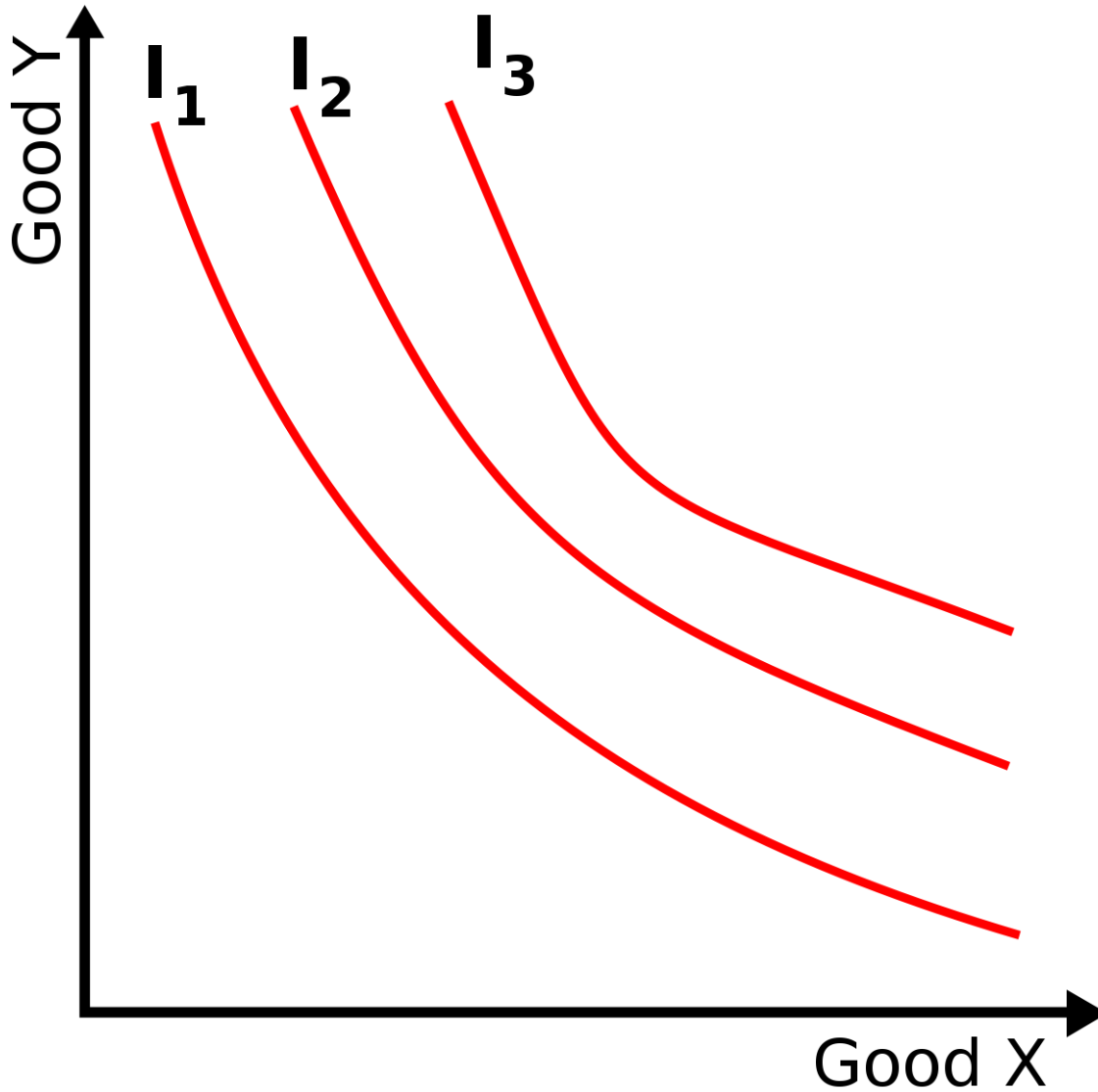


- This implies that an oligopolistic market is characterized by a certain degree of price rigidity or stability, especially when there is a change in prices in downward direction.
- For example, if an organization under oligopoly reduces price of products, the competitor organizations would also follow it and neutralize the expected gain from the price reduction.
- On the other hand, if the organization increases the price, the competitor organizations would also cut down their prices. In such a case, the organization that has raised its prices would lose some part of its market share.
- The kinked demand curve model seeks to explain the reason of price rigidity under oligopolistic market situations.

XIII. Indifference Curve

- An indifference curve, with respect to two commodities, is a graph showing those combinations of the two commodities that leave the

consumer equally well off or equally satisfied—hence indifferent—in having any combination on the curve.

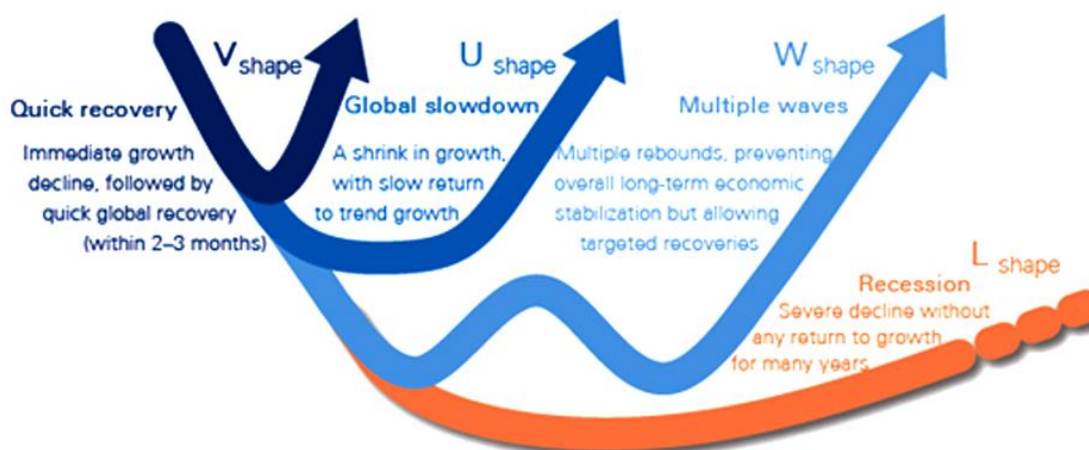


- An indifference curve shows a combination of two goods that give a consumer equal satisfaction and utility thereby making the consumer indifferent.
- Along the curve the consumer has an equal preference for the combinations of goods shown—i.e. is indifferent about any combination of goods on the curve.
- Typically, indifference curves are shown convex to the origin, and no two indifference curves ever intersect.

Shapes of Economic Recovery

- Economic recovery can take many forms, which is depicted using alphabetic notations. For example V-shaped recovery, U-shaped recovery, elongated U-shaped recovery, W-shaped recovery and L-shaped recovery.
- The fundamental difference between the different kinds of recovery is the time taken for economic activity to normalize.

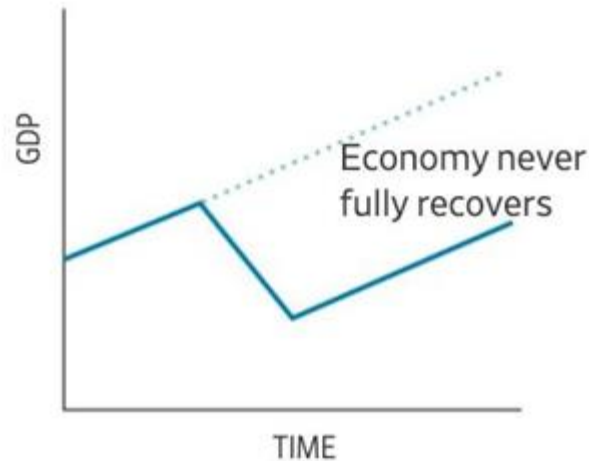
Four scenarios for economic development



L-shaped recovery

- An **L-shaped recovery** is a type of recovery characterized by a slow rate of recovery, with persistent unemployment and stagnant economic growth. L-shaped recoveries occur following an economic recession characterized by a more-or-less steep decline in the economy, but without a correspondingly steep recovery.

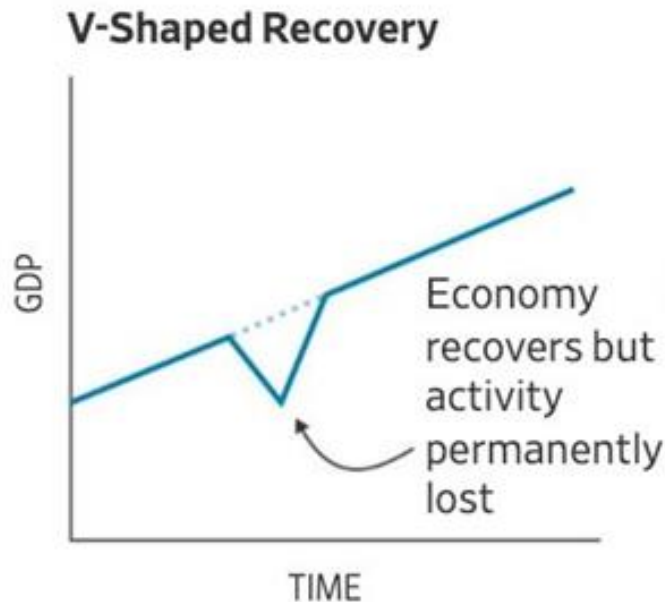
L-Shaped Recovery



- **Example–** Last decade in Japan
What is known as the lost decade in Japan is widely considered to be an example of an L-shaped recovery. Leading up to the 1990s, Japan was experiencing remarkable economic growth. In the 1980s, the country ranked first for gross national production per capita. During this time, real estate and stock market prices were quickly rising. Concerned about an asset price bubble, the Bank of Japan raised interest rates in 1989. A stock market crash followed, and annual economic growth slowed from 3.89 percent to an average of 1.14 percent between 1991 to 2003.

V-shaped

- In a **V-shaped** recession, the economy suffers a sharp but brief period of economic decline with a clearly defined trough, followed by a strong recovery. V-shapes are the normal shape for recession, as the strength of economic recovery is typically closely related to the severity of the preceding recession.



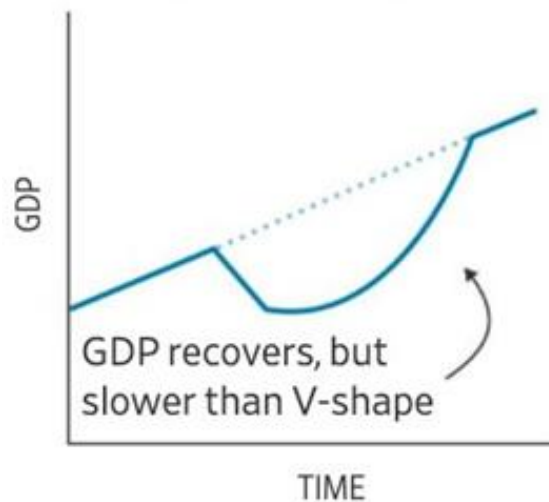
Example – The Recession of 1953

The recession of 1953 in the United States is another clear example of a V-shaped recovery. This recession was relatively brief, and mild with only a 2.2% decline in GDP and unemployment rate of 6.1%. Growth began to slow in the third quarter of 1953, but by the fourth quarter of 1954 was back at a pace well above the trend. Therefore, the chart for this recession and recovery would represent a V-shape.

U-shaped recovery

- A **U-shaped recovery** describes a type of economic recession and recovery that charts a **U shape**, established when certain metrics, such as employment, GDP, and industrial output sharply decline and then remain depressed typically over a period of 12 to 24 months before they bounce back again.

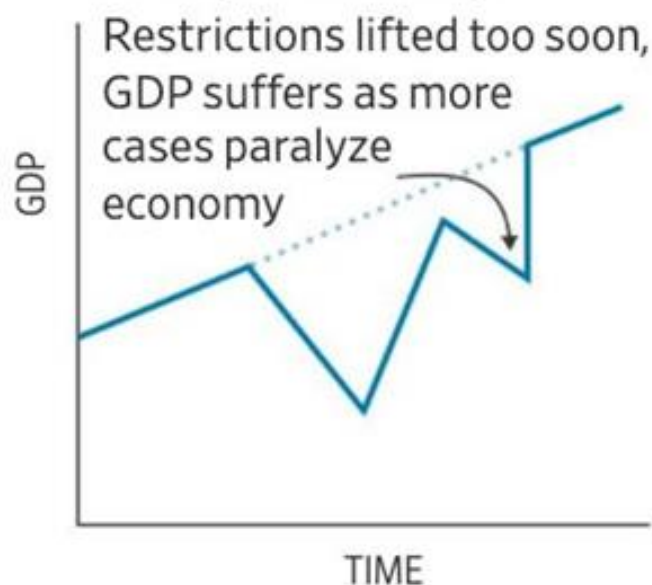
U-Shaped Recovery



W-shaped Recovery

- A W-shaped recovery involves a sharp decline in these metrics followed by a sharp rise back upward, followed again by a sharp decline and ending with another sharp rise. The middle section of the W can represent a significant bear market rally or a recovery that was stifled by an additional economic crisis.

W-Shaped Recovery



Example – US economy in 1980's

The United States experienced a W-shaped recovery in the early 1980s. From January to July 1980 the U.S. economy experienced the initial recession, and then entered recovery for almost a full year before dropping into a second recession in 1981 to 1982.

20. Emergency Provisions in Indian Constitution

- A state of emergency in India refers to a period of governance that can be proclaimed by the **President of India** during certain crisis situations. Under the advice of the cabinet of ministers, the President can overrule many provisions of the Constitution, which guarantees **Fundamental Rights** to the citizens of India.
- The emergency provisions are contained in **Part XVIII** of the Constitution of India, from **Article 352 to 360**. These provisions enable the Central government to meet any abnormal situation effectively.
- The rationality behind the incorporation is to safeguard the sovereignty, unity, integrity and security of the country, the democratic political system and the Constitution.

The Constitution stipulates three types of emergencies-

- 1) National Emergency**
- 2) Constitutional Emergency**
- 3) Financial Emergency**

1. National Emergency

- National emergency can be declared on the basis of war, external aggression or armed rebellion. The Constitution employs the expression 'proclamation of emergency' to denote an emergency of this type.

Grounds of declaration:

- Under Article 352, the president can declare a national emergency when the security of India or a part of it is threatened by war or external aggression or armed rebellion.
- The President can declare a national emergency even before the actual occurrence of war or armed rebellion or external aggression
- When a national emergency is declared on the grounds of **'war' or 'external aggression'**, it is known as **'External Emergency'**. On the other hand, when it is declared on the grounds of **'armed rebellion'**, it is known as **'Internal Emergency'**.
- This term 'armed rebellion' is inserted from the **44th amendment**. Before this term it was known as internal disturbance.

Example:

- If India and Pakistan openly accept that they will use armed forces against each other is simply war.
- If there is no formal declaration that there will be armed forces used against a country is External aggression.
- And if because of these two grounds an emergency is proclaimed as an **external emergency**.

The **38th Amendment Act** of 1975 made the declaration of National Emergency immune to judicial review. But, this provision was subsequently deleted by the 44th Amendment Act of 1978.

In Minerva Mills case (1980), the Supreme Court held that National Emergency can be challenged in the court on the ground of malafide or that the declaration was based on wholly extraneous and irrelevant facts.

Parliamentary approval and duration

The proclamation of emergency must be approved by both the houses of parliament within one month from the date of its issue.

However, if the proclamation of emergency is issued at a time when the Lok Sabha has been dissolved or the dissolution takes place during the period of one month without approving the proclamation, then the proclamation survives until 30 days from the first sitting of Lok Sabha after its reconstitution, provided the Rajya Sabha has in the meantime approved it.

If approved by both the houses, the Emergency continues for 6 months and can be extended to an indefinite period with an approval of the Parliament for every six months.

Every resolution approving the proclamation of emergency or its continuance must be passed by either House of Parliament by a special majority.

- **Revocation of proclamation**

- A proclamation of Emergency may be revoked by the President at any time by a subsequent proclamation. Such proclamation does not require parliamentary approval.
- The emergency must be revoked if the Lok Sabha passes a resolution by a simple majority disapproving its continuation.

- **Effects of national emergency**

- A proclamation of Emergency has drastic and wide-ranging effects on the political system. These consequences can be grouped into 3 categories:

- **Effects on the centre-state relations:** While a proclamation of Emergency is in force, the normal fabric of the Centre-State relations undergoes a basic change. this can be studied under three heads:
 - **Executive:** Centre becomes entitled to give executive directions to a state on 'any' matter
 - **Legislative:** The parliament becomes empowered to make laws on any subject mentioned in the state list, the president can issue ordinances on State subjects also, if the parliament is not in session. The laws made on state subjects by the parliament become inoperative six months after the emergency has ceased to be in operation.
 - **Financial:** the president can modify the constitutional distribution of revenues between the centre and the states.
- **Effect on the life of the Lok Sabha and State Assembly:**
 - While a proclamation of National Emergency is in operation, the life of the Lok Sabha may be extended beyond the normal term for one year at a time. However, this extension cannot continue beyond a period of six months after the emergency has ceased to operate.

- Similarly, the Parliament may extend the normal tenure of a state Legislative Assembly by one year each time during a national emergency, subject to a maximum period of six months after the emergency has ceased to operate.
- **Effect on fundamental rights:**Articles 358 and 359 describes the effect of a National Emergency on the Fundamental Rights. These two provisions are explained below:
 - **Suspension of Fundamental rights under Article 19:**According to Article 358, when a proclamation of National Emergency is made, the six fundamental rights under article 19 are automatically suspended. Article 19 is automatically revived after the expiry of the emergency.
 - The 44thAmendment Act laid out that Article 19 can only be suspended when the National Emergency is laid on the grounds of war or external aggression and not in the case of armed rebellion.
 - **Suspension of other Fundamental Rights:**Under Article 359, the President is authorised to suspend, by order, the right to

move any court for the enforcement of Fundamental Rights during a National Emergency. Thus, **remedial measures are suspended and not the Fundamental Rights.**

- The suspension of enforcement relates to only those Fundamental Rights that are specified in the Presidential Order.
- The suspension could be for the period during the operation of emergency or for a shorter period.
- The Order should be laid before each House of Parliament for approval.
- The 44 Amendment Act mandates that the President cannot suspend the right to move the court for the enforcement of Fundamental Rights guaranteed by Article 20 and 21.
- **Declarations made so far:** This type of emergency has been proclaimed three times so far- in 1962, 1971 and 1975
 - The first proclamation of National Emergency was issued in October 1962

on account of Chinese aggression in the NEFA and was in force till January 1968.

- The second proclamation of National Emergency was made in December 1971 in the wake of the attack by Pakistan.
- Even when the emergency was in operation, the third proclamation of National Emergency was made in June 1975. Both the second and the third proclamations were revoked in March 1977

2. President's Rule

- Article 355 imposes a duty on the centre to ensure that the government of every state is carried on in accordance with the provisions of the constitution.
- It is this duty in the performance of which the centre takes over the government of a state under Article 356 in case of failure of constitutional machinery in a state.
- This is popularly known as 'President's Rule'.
- **Grounds of imposition:**the president's ruler can be proclaimed under Article 356 on two grounds:
 - Article 356 empowers the President to issue a proclamation if he is satisfied that a situation has arisen in which the

government of a state cannot be carried on in accordance with the provisions of the constitution.

- Article 365 says that whenever a state fails to comply with or to give effect to any direction from the centre, it will be lawful for the President to hold that a situation has arisen in which the government of the state cannot be carried on in accordance with the provisions of the constitution.
- **Parliamentary approval and duration:**A proclamation imposing president's rule must be approved by both the houses of parliament within two months from the date of its issue.
 - However, if the proclamation of President's rule is issued at a time when the Lok Sabha has been dissolved or the dissolution of the Lok Sabha takes place during the period of two months without approving the proclamation, then the proclamation survives until 30 days from the first sitting of the Lok Sabha after its reconstitution, provided that the Rajya Sabha approves it in the meantime
- **Consequences of the President's rule:**The President acquires the following extraordinary powers when the President's rule is imposed in a state:
 - He can take up the functions of the state government and powers vested in the governor or any other executive authority in the state.

- He can declare that the powers of the state legislature are to be exercised by the parliament.
- He can take all other necessary steps including the suspension of the constitutional provisions relating to any body or authority in the state.
- **Scope of judicial review:**The 38th Amendment act of 1975 made the satisfaction of the President in invoking Article 356 final and conclusive which would not be challenged in any court on any ground.
 - But, this provision was subsequently deleted by the 44th Amendment Act of 1978 implying that the satisfaction of the President is not beyond judicial review.

3. Financial Emergency

- **Grounds of declaration: Article 360** empowers the president to proclaim a Financial Emergency if he is satisfied that a situation has arisen due to which the financial stability or credit of India or any part of its territory is threatened.
- **Parliamentary approval and duration:**A proclamation declaring financial emergency must be approved by both the Houses of Parliament within two months from the date of its issue.
 - However, if the proclamation of Financial Emergency is issued at a time when the Lok Sabha has been dissolved or the dissolution of the Lok Sabha takes place during the period of two months without approving the proclamation, then the proclamation survives until 30 days from the first

sitting of the Lok Sabha after its reconstitution, provided the Rajya Sabha has in the meantime approved it.

- Once approved by both the houses of Parliament, the Financial Emergency continues indefinitely till it is revoked.
- Effects of Financial Emergency
- Extension of the executive authority of the Union over the financial matters of the States.
- Reduction of salaries and allowances of all or any class of persons serving in the State.
- Reservation of all money bills or other financial bills for the consideration of the President after they are passed by the legislature of the State.
- Direction from the President for the reduction of salaries and allowances of all or any class of persons serving the Union; and the judges of the Supreme Court and the High Courts.
- Criticism of the Emergency Provision
- Some members of the Constituent Assembly criticised the incorporation of emergency provisions in the constitution on the following grounds:
 - The federal character of the constitution will be destroyed and the union will become all-powerful

- The powers of the State- both the Union and the Units- will entirely be concentrated in the hands of the union executive.
- The president will become a dictator
- The financial autonomy of the state will be nullified
- Fundamental rights will become meaningless and, as a result, the democratic foundation of the constitution will be destroyed.'
- While defending the emergency provisions in the Constituent Assembly, Dr Ambedkar accepted the possibility of their misuse. He observed, 'I do not altogether deny that there is a possibility of the Articles being abused or employed for political purposes.'

21. Western Coastal Plain and Eastern Coastal Plain

A **coastal plain** is a flat, low lying area of land near to the sea. India's coastline stretches for about 7,000 kilometres. India has access to water from two sides known as the eastern and western coastal plains, which encompass thirteen states and union territories. **The western coastal lowlands** extend all the way to the **Arabian Sea**, while the eastern coastal plains parallel the Bay of Bengal.

Western Coastal Plain

- The **Western Coastal** Plains go from Kerala in the south to Gujarat in the north, passing through **Karnataka, Goa, and Maharashtra** along the way.
- The western coastal plains run about 1500 kilometres north to south, with widths ranging from 10 to 25 kilometres.

- The **West Continental Shelf** is at its broadest near the coast of Bombay. This region is rich in oil.
- There are several gorgeous **lagoons along the Malabar Coast**, making it a popular tourist destination.
- Submerged coastal plains may be found in the western coastal plains.
- The **city of Dwaraka**, which was originally a part of the Indian mainland and is located along the west coast, is said to have submerged beneath water. Because of the submergence, it is a small band with natural circumstances for the construction of ports and harbours.
- The western shore is narrower than the east.

The western coast is classified into four sections:

- Kachchh and Kathiawar coast**
- Konkan coast**
- Kanada coast**
- Malabar coast**

Eastern Coastal Plain

- The eastern coastal plains go from **West Bengal** in the north to Tamil Nadu in the south, passing through **Andhra Pradesh and Odisha** along the way.
- The eastern coastal plain has deltas of the rivers **Mahanadi, Krishna, Godavari, and Cauvery**.
- Agriculture thrives in the deltas, which are extremely fertile and productive. As a result, the Krishna River delta is known as the "Granary of South India."

- Land **Emergence happens** as a result of the rise of tectonic plates or the receding of the sea. Because of the movement of the tectonic plates during **Continental Drift**, the shoreline is straight.
- The strategic and economic importance of peninsular India is increased by the Indian coasts.
- The eastern shore is separated into three sections:
 - 1) **The Utkal coast**
 - 2) **The Andhra coast**
 - 3) **The Coromandel coast**

Eastern Coastal Plain

- The Eastern Coastal Plains are a large area of land in India that lies between the Eastern Ghats and the Bay of Bengal.
- It runs from Tamil Nadu to West Bengal and is broader and more level than the Western Coastal Plain.
- The Chilika Lake, located in the state of Odisha, is an important component of the eastern coastal plains.
- This coast is characterised by river deltas such as the Godavari, Mahanadi, Krishna, and Kaveri.
- The eastern coastal plain is broader and represents an emerging coast.

Western Coastal Plain

- The Western Coastal Plains are a broad coastal plain that runs from India's west coast to the Western Ghats highlands.
- The plane travels from Gujarat in the north to Tamil Nadu in the south.
- The northern half of the shore is known as the Konkan coast, the centre lengths as the Kanara coast, and the southern stretch as the Malabar Coast.
- The Vembanad Lake is the largest lake on this shore.
- Submerged coastal plains can be found throughout the western coast.
- The city of Dwaraka, which was formerly a part of the Indian mainland and is now

located on the west coast, is thought to be underwater.

- Between the Bay of Bengal in the east and the Eastern Ghats in the west is the Eastern Coastal Plain.
- On the Eastern Coastal Plains, big rivers generate wide deltas.
- Due to the alluvial soil, the Eastern Coastal Plain is quite fruitful.
- The Eastern Coastal Plain is a flat area.
- Between the Arabian Sea and the Western Ghats is the Western Coastal Plain.
- Small rivers do not produce deltas in the Western Coastal Plains.
- Except for the Malabar Coast in the south, the Western Coastal Plain is unsuitable for agriculture.
- Mountain ranges cut through the western coastal plain.

Significance of Coastal Plains

- The **coastal plains** of India are mostly covered by rich soils that are good for agriculture. The most major crop farmed in these areas is rice.
- The large and small ports around the Indian shores aid in commerce.
- The **sedimentary rocks** of these coastal plains are said to contain massive amounts of mineral oil that can be used as a source of **marine economy**.
- **Fishing** has become an important source of income for many who live near the coast.
- India's coastal plains are rich in coastal and marine environments, as well as a vast array of mangroves, **coral reefs, estuaries, and lagoons** that offer good tourism options.
- India is a country that is surrounded by water on three sides. The coastal lowlands of India run along the country's west and east coastlines. The coastline of India is made up of 13 states and union territories. The western coastal lowlands extend all the way to the Arabian Sea, while the eastern coastal plains parallel the Bay of Bengal.

22. Biodiversity Act

- The genesis of the Biological Diversity Act of 2002 can be traced back to India's commitment to realize the objectives outlined in the 1992 United Nations Convention on Biological Diversity (CBD).
- This international convention recognizes the sovereign rights of states to utilize their own biological resources.
- Enacted in 2002, the legislation aims to safeguard biological resources, ensure their sustainable utilization, and facilitate an equitable distribution of benefits arising from their use and associated knowledge among local populations.
- The overarching objectives of the Act encompass regulating the appropriate utilization of components within biological diversity and ensuring the just sharing of benefits derived from such utilization.
- The Act pursues various goals, including the protection of traditional knowledge, prevention of biopiracy, prohibition of individuals obtaining patents without government consent, among others.
- In accordance with Section 8, sub-sections (1) and (3) of the Act, provisions are made for the establishment of a National Biodiversity Authority located in Chennai.

Objectives Of Biodiversity Act 2002

- **Conservation of Biological Diversity:** The primary objective is to conserve biological diversity by regulating and overseeing the proper utilization of its components and ensuring an equitable distribution of benefits arising from such usage.

- **Protection of Traditional Knowledge:** The Act aims to safeguard traditional knowledge associated with biological diversity.
- **Prevention of Biopiracy:** It seeks to prevent unauthorized acquisition or use of biological resources and knowledge, commonly known as biopiracy.
- **Control on Patents:** The Act prohibits individuals from obtaining patents related to biological resources without obtaining the necessary permission from the government.
- **Biodiversity Conservation Plans:** To achieve the conservation goal, the Act involves the development of national plans and programs for biodiversity conservation.
- **State Powers for Biodiversity Areas:** State governments are empowered to notify and preserve areas with significant biodiversity.
- **Central Government Authority:** The Central Government is given the authority to notify species falling under categories such as dangerously endangered, on the brink of extinction, threatened, and precluded species.
- **Sustainable Use:** The concept of sustainable use implies the regulation of natural resource utilization to ensure their continued availability, rather than depletion.
- **Benefit Sharing:** The Act includes provisions for benefit-sharing, aiming for fair and equitable distribution of benefits derived from accessed biological resources, by-products, knowledge, and associated practices. The terms and conditions for such benefit-sharing are agreed upon by the person seeking benefits and the relevant local bodies.

Salient Features

- **Prohibited Actions without Authorization:** The Act prohibits certain actions without prior authorization from the National Biodiversity Authority (NBA), including acquiring biological resources for research or commercial use, disseminating study findings related to Indian biological resources, and asserting intellectual property rights over innovations created using biological materials imported from India.
- **Specific Funding and Budget:** Authorities conducting studies on the nation's biological resources receive specific funding and a distinct budget as outlined by the Act.
- **Monitoring and Sustainable Use:** The Act empowers authorities to monitor the usage of biological resources, ensuring their sustainable use. It also grants control over financial investments, overseeing their returns and proper disposal.
- **Notification of Threatened Species:** The Central Government, in consultation with the NBA, is required to notify threatened species, imposing restrictions or controls on their collection, restoration, and conservation.
- **Establishment of Institutions:** The Act mandates the establishment of institutions as homes for various types of biological resources.
- **Offence Definitions:** Offences covered by the statute are classified as cognizable and non-bailable.
- **National Green Tribunal Oversight:** Any complaints regarding decisions on benefit-sharing or orders of the NBA or a State Biodiversity Board under this Act should be addressed to the National Green Tribunal.

Exemptions From BDA 2006

- **Commodity Sale Exemption:** The Act does not cover Indian biological resources that are typically sold as commodities. This exemption is applicable only when biological resources are exclusively used as commodities.
- **Joint Research Initiatives:** The legislation allows for the utilization of indigenous biological resources and associated knowledge, exempting cases where such usage is authorized by the central government for joint research initiatives involving Indian and foreign universities.
- **Exemption for Cultivators and Breeders:** Excluded from the Act are uses by cultivators and breeders, including farmers, animal and beekeepers, as well as traditional healers like vaidis and hakims.
- **Frameworks of BDA 2002**
- The Biological Diversity Act, 2002 establishes a three-tiered framework to regulate access to biological resources, involving:
The National Biodiversity Authority (NBA):
 - The Central Government of India established the National Biodiversity Authority (NBA) in 2003 to implement the Biological Diversity Act (2002).
 - NBA operates as a statutory organization, facilitating, regulating, and advising the Indian government on the preservation and sustainable use of biological resources.
 - The headquarters of NBA is located in Chennai, Tamil Nadu, India.
- **Structure of NBA:**
 - **Chairman:** Appointed by the central government.

- Ex Officio Members: Three members, one from the ministry overseeing tribal affairs and two from the ministry overseeing environment and forests.
- Ex Officio Members Representing Central Government Ministries: Seven members from ministries such as Agricultural Research and Education, Biotechnology, Ocean Development, Agriculture and Cooperation, Indian Systems of Medicine and Homoeopathy, Science and Technology, and Scientific and Industrial Research.
- Non-Official Members: Five members selected from professionals and scientists with specialized knowledge in relevant fields of science and technology, and scientific and industrial research.
- **State Biodiversity Boards (SBBs):**
- State Biodiversity Boards are established at the state level to implement the provisions of the Biological Diversity Act within their respective states.
- **Biodiversity Management Committees (BMCs):**
- Biodiversity Management Committees operate at the local level, working to promote conservation, sustainable use, and documentation of biological diversity.
- **Functions of the National Biodiversity Authority (NBA):**
- Creating Supportive Environment:
 - Foster an environment conducive to biodiversity conservation and sustainable usage where appropriate.
- Compliance with Biological Diversity Act, 2002:
 - Advise the central government on compliance with the Biological Diversity Act, enforce regulations, and provide recommendations for fair and equitable benefit sharing and access to biological resources.
- Preventing Unauthorized Intellectual Property Rights:

- Take steps to prevent the granting of intellectual property rights on biological resources obtained from India or related information unlawfully in any foreign nation.
- Advice on Designation of Historic Sites:
 - Provide advice to state governments on designating places of biological value as historic sites and offer management suggestions.
- **State Biodiversity Boards (SBBs):**
- Establishment and Structure:
 - SBBs are created by State Governments in accordance with Section 22 of the Act.
 - Structure includes a Chairman, up to five ex-officio members representing relevant State Government Departments, and up to five specialists in biodiversity conservation and fair benefit distribution.
- Functions of SBBs:
 - Provide advice to the State Government on conservation, sustainable usage, and fair benefit sharing, following directives from the Central Government.
 - Approve or impose restrictions on commercial use and bio-utilization of biological resources.
- **Biodiversity Management Committees (BMCs):**
- Establishment and Structure:
 - Every local body must establish BMCs according to Section 41 of the Act.
 - Structure includes a chairperson and no more than six members chosen by the local body.
- Functions of BMCs:

- Primary responsibility is to create the People's Biodiversity Register (PBR) in collaboration with the local population.
- The PBR includes detailed information on local biological resources, traditional knowledge, and practices.

- **People's Biodiversity Registers (PBR):**

- Participatory documenting of regional biodiversity, traditional knowledge, and practices.
- Legal records for establishing the rights of local residents to biological resources and related traditional knowledge.

- **Biodiversity Heritage Sites (BHS):**

- Designation by the State Government under Section 37 of the Act.
- Criteria include richness of species, endemism, presence of endangered species, keystone species, historical importance, and cultural, ethical, or aesthetic values.

- **SHORTCOMINGS OF BDA 2022**

- **profit-Centric Emphasis:**

- Emphasis on preventing profit-sharing from commercial biological resource use rather than prioritizing provisions for efficient conservation.

- **Neglect of Biodiversity Protection:**

- The focus on preventing bio-piracy by developed countries led to neglect of the primary goal of efficient biodiversity protection.

- **Lack of Harmonization:**

- Fails to serve as an umbrella and lacks harmonization with previously enacted legislation, potentially leading to inconsistencies.

- **Absence of Guidelines for Non-Monopoly Rights:**

- Does not establish guidelines for assigning non-monopoly rights or evaluating contributions from firms, local communities, or individual inventions.
- **Weak Integration of Communities:**
 - The fundamental provision for integrating communities and the nation is weak, limiting effective collaboration and participation.
- **Limited Rights for Immediate Holders:**
 - Immediate rights holders lack authority to defend their rights comparable to patent holders or applicants, hindering their ability to protect their interests.
- **Unprotected People's Biodiversity Register:**
 - Information recorded in the People's Biodiversity Register is not legally protected, exposing it to entities interested in utilizing a specific area's resources.
- **Lack of Strict Monitoring:**
 - The absence of strict monitoring for the documentation in the People's Biodiversity Register raises concerns about ensuring equitable benefit sharing.

Biological Diversity Amendment Bill 2021

Provisions	Biological Diversity Act, 2002	Amendments to the 2002 Act
Access to Biological Resources	Requires anyone seeking access to biological resources or associated knowledge in India to obtain prior approval	The Bill modifies the classification of entities and activities requiring intimation, introducing

	or inform the regulatory authority about their intent.	exemptions in certain cases.
Intellectual Property Rights (IPR)	Demands NBA approval before applying for IPR related to biological resources from India.	Suggests that approval will be required before the actual grant of the IPR, not during the application process.
Exempting AYUSH Practitioners	–	Seeks to exempt registered AYUSH medical practitioners and others from giving prior intimation to State biodiversity boards for accessing biological resources for certain purposes.
Benefit Sharing	Mandates benefit sharing, including monetary and non-monetary benefits, determined by NBA when granting approvals.	The Bill removes the applicability of benefit sharing requirements from research, bio-survey, and bio-utilisation.
Criminal Penalties	Imposes criminal penalties, including imprisonment, for	Decriminalizes offenses, introducing fines ranging from one

offenses such as not obtaining approval or intimation for specific activities.

lakh to fifty lakh rupees instead.

Concerns related to amendment

- Favoring Industry over Conservation:
 - Amendments may prioritize industry interests over biodiversity conservation, contrary to CBD principles.
 - Weakening benefit-sharing and community involvement frameworks.
- Decriminalization of Violations:
 - Proposes decriminalization, limiting NBA's power to file FIRs.
 - Potential hindrance to enforcing biodiversity protection laws.
- Exemption for Domestic Companies:
 - Only "foreign-controlled companies" need permission for biodiversity resource use.
 - Concerns about unchecked exploitation by domestic companies with foreign shareholding.
- Limited Benefit Sharing:
 - Exemption for "codified traditional knowledge" may allow profiteering without benefit sharing.
 - Risks neglecting responsibility to share profits with traditional knowledge holders.
- Ignoring Conservation Issues:
 - Amendments criticized for not effectively addressing biodiversity conservation challenges.
 - Perception of a focus on reducing regulations, potentially impacting biodiversity and traditional knowledge holders negatively.

Way Forward

- Achieving a harmonious blend of economic development and sustainable biodiversity conservation in India requires a strategic approach. Here's a proposed way forward:
- Economic Development and Conservation: Strive for policies that balance economic growth with biodiversity preservation, aligning with national and international commitments.
- Stakeholder Engagement: Initiate transparent and inclusive dialogues with diverse stakeholders, such as local communities, indigenous groups, conservationists, scientists, and industry representatives.
- Varied Perspectives: Ensure that the decision-making process considers the diverse perspectives of all stakeholders.
- Informed Decision-Making: Base decisions on rigorous scientific evidence, ensuring that biodiversity conservation measures are effective and sustainable.
- Education and Awareness: Promote public awareness regarding the importance of biodiversity conservation and the potential impacts of legislative amendments.
- Community Involvement: Encourage active involvement and understanding among communities to garner support for conservation efforts.
- Flexibility in Policies: Implement policies that can adapt to changing circumstances and emerging conservation needs over time.
- Impact Assessment: Establish a robust monitoring and evaluation framework to assess the impact of legislative changes on biodiversity conservation regularly.
- Global Cooperation: Collaborate with international bodies and countries to share best practices, experiences, and technologies in biodiversity conservation.
- Legal Safeguards: Protecting Indigenous Knowledge: Strengthen legal provisions to safeguard indigenous knowledge and ensure fair benefit-sharing mechanisms.

23. Monoclonal Antibodies 2024

- Monoclonal antibodies (mAbs) are laboratory-produced molecules designed to mimic the immune system's ability to fight off harmful pathogens, such as bacteria and viruses. They are highly specific, targeting a single antigen or protein, and are used in various medical applications.
- **Historical Development and Significance:** The development of monoclonal antibodies dates back to the 1970s when scientists first devised hybridoma technology, a method to create mAbs. The significance lies in their precision and versatility, making them invaluable tools in both diagnostics and therapies.
- *How Monoclonal Antibodies Work:*
- **Mechanism of Action:** mAbs work by specifically binding to a target antigen, which can be a protein on the surface of a cancer cell, a virus, or an immune checkpoint molecule. This binding can lead to various outcomes, such as blocking the function of the antigen, flagging the target for destruction by the immune system, or delivering a drug payload to the target.
- **Specificity and Selectivity:** Monoclonal antibodies exhibit an extraordinary level of specificity. They are engineered to recognize and interact with a particular target, reducing the risk of off-target effects compared to conventional drugs that may affect multiple processes in the body.
- **Comparison with Traditional Drugs:** Compared to traditional drugs that often have broader effects, mAbs offer a more targeted approach. This specificity can lead to enhanced therapeutic efficacy and reduced side effects, though they can also be more expensive to develop and produce.
- *Production of Monoclonal Antibodies:*

- **Hybridoma Technology:** Hybridoma technology involves fusing a specific antibody-producing B cell with a myeloma cell to create immortalized hybrid cells that continuously produce a single type of antibody. This method was the basis for the first monoclonal antibodies and is still used today.
- **Recombinant DNA Technology:** Recombinant DNA technology allows the production of mAbs in cell lines derived from animals or even humans. This approach can create antibodies with reduced immunogenicity, as they closely resemble human antibodies.
- **Phage Display Technology:** Phage display is an alternative method that utilizes bacteriophages to display antibodies on their surface. This technique enables the selection of antibodies with specific binding properties.
- *Types of Monoclonal Antibodies:*
- **Murine (Mouse-Derived) Antibodies:** These antibodies are entirely derived from mice and can elicit an immune response when administered to humans, limiting their clinical use.
- **Chimeric Antibodies:** Chimeric antibodies combine mouse-derived antigen-binding regions with human constant regions, reducing immunogenicity.
- **Humanized Antibodies:** Humanized antibodies have the majority of their structure derived from human components, with only the antigen-binding region from mice.
- **Fully Human Antibodies:** Fully human antibodies are entirely derived from human sources and have minimal immunogenicity, making them suitable for therapeutic use.
- *Applications of Monoclonal Antibodies:*

- **Cancer Therapy:** Monoclonal antibodies play a pivotal role in targeted cancer therapies. They can be designed to recognize specific antigens on cancer cells, hindering their growth, signaling the immune system to attack, or delivering toxic payloads directly to cancer cells.
- **Autoimmune Diseases:** In the treatment of autoimmune disorders, mAbs help modulate the immune system's response, reducing inflammation and damage to healthy tissues.
- **Infectious Diseases:** Monoclonal antibodies have applications in treating viral and bacterial infections. They can neutralize pathogens or inhibit their entry into host cells.
- **Neurological Disorders:** While less common, mAbs are being explored as potential treatments for neurological diseases, including Alzheimer's and multiple sclerosis.
- *Monoclonal Antibodies in Diagnosis:*
- **ELISA (Enzyme-Linked Immunosorbent Assay):** Monoclonal antibodies are crucial components of ELISA tests used for the detection of antigens or antibodies in various diagnostic applications.
- **Flow Cytometry:** In flow cytometry, mAbs are used to label specific cell populations for analysis, aiding in disease diagnosis and research.
- **Immunohistochemistry:** Monoclonal antibodies are applied to tissue samples to identify specific proteins or antigens, aiding in the diagnosis of diseases such as cancer.
- *Challenges and Limitations:*
- **Immunogenicity:** Some mAbs, especially those with non-human components, can provoke immune responses in patients,

potentially reducing their effectiveness or causing adverse reactions.

- **High Production Costs:** The development and production of mAbs can be expensive, limiting their accessibility to patients, particularly in resource-constrained healthcare systems.
- **Limited Penetration into Certain Tissues:** Monoclonal antibodies may have difficulty penetrating certain tissues or crossing the blood-brain barrier, which can limit their effectiveness in treating diseases that affect these areas.
- *Future Trends and Developments:*
- **Advancements in Antibody Engineering:** Ongoing research continues to refine antibody engineering techniques, enhancing their specificity and reducing immunogenicity.
- **Personalized Medicine:** The use of mAbs is aligning with the concept of personalized medicine, tailoring treatments to individual patients based on their unique biology.
- **New Therapeutic Targets:** As our understanding of disease mechanisms improves, novel therapeutic targets are emerging, and mAbs are likely to play a critical role in these treatments.
- *Economic and Ethical Considerations:*
- **Cost-Effectiveness of Monoclonal Antibodies:** Assessing the cost-effectiveness of mAbs is crucial, as their high production costs can impact healthcare budgets and patient access.
- **Access and Affordability:** Ensuring equitable access to mAb therapies is an ethical concern, as these innovative treatments should be available to those who need them, regardless of their economic status.

- **Ethical Issues:** The use of animals in antibody production raises ethical questions. Efforts are made to minimize animal use and explore alternative methods.

24. Near Field Communications

Near Field Communications (NFC) is a **short-range wireless technology** that allows mobile devices to actively *interact with passive physical objects and other active mobile devices*, connecting the physical world to mobile services in ways that empower and benefit users. A term **“Tap ‘n Go”** is also used for this, because it clearly conveys a visual image in which this technology is intended to be used.

- NFC builds upon **Radio-Frequency Identification (RFID)** and contactless smartcard technologies that enable stored data to be actively “read” at a short distance.
- RFID is a powerful enabling technology that is being applied in an astonishing range of applications and uses, from supply chain management and product inventory control to identity authentication and access control. However, as RFID technologies become widely deployed, the possibility of unwanted identification, tracking and surveillance may increase, as may the likelihood of data interception, “cloning” and misuse.
- NFC technology addresses some of the security and privacy concerns of RFID by restricting the physical separation of NFC devices and tags to a close proximity. Additionally, NFC includes specific reference use cases, additional technical specifications and usage profile specifications for existing standards. In the most-common use case scenarios, users’ mobile devices will scan,

acquire and act upon the data available in posters and kiosks, connect and exchange data with other devices, emulate RFID tag readers to read and act on scannable coupons, vouchers, tickets and emulate a contactless card to act as a loyalty, access, or payment card. NFC builds upon the proven strengths of RFID “remote identification” technologies while addressing many of the security and privacy risks.

- NFC has potential to become an extensively used system for making payments in the near future. NFC technology is being added to a growing number of mobile handsets to enable mobile payments, as well as many other applications.
- *Need for NFC:*
- Though contactless or proximity cards are already around, their reach isn't very vast and bringing NFC to mobiles and other similar platforms will definitely up the usage.
- The essence of NFC is short-range wireless communication that is both safe and effective. *The maximum distance is about 20cms, which ensures that no unauthorized communication takes place. It scores over various shortcomings of Bluetooth such as high power consumption and security concerns. This form of communications also works when one of the devices is not powered.*
- *NFC-enabled Smartphone have the potential to replace credit cards. This is because NFC phones pack a smart chip – a complex 80-character code that is really hard to crack. Such a device can safely store confidential credit card details and be handy for purchases on the go.*
- Since all NFC transactions take place within a very small area, anywhere from a touch to 4 centimeters. *This means that you*

can't unknowingly purchase something because you walk next to a smart poster.

- Is it a New Technology?
- No. NFC cannot be labeled a 'new' technology, as Nokia has been active in this line since 2004. Along with Philips and Sony, it has founded the NFC Forum. Participation of 130 countries in this forum clearly signals that NFC is set become a way of life in the years to come.
- *How does it work?*
- Near Field Communication is based on inductive-coupling, where loosely coupled inductive circuits share power and data over a distance of a few centimeters. NFC devices share the basic technology with proximity (13.56MHz) RFID tags and contactless smartcards, but have a number of key new features. Any device, a cell phone, a camera or a watch, can be equipped with an NFC 'initiator', *which is simply an antenna that can store data*. If the device is an NFC Smartphone, the 'initiator' and 'target' (an NFC reader) need to be up close for data exchange to happen. The 'reader' is attached to a point-of-sale (PoS) terminal or cash-register in a retail store that accepts NFC payments. A simple wave of the phone can pay for a purchase. Alternatively, two NFC phones can be tapped lightly to exchange business cards.
- In standby mode, a well-designed NFC solution does not consume any power. And since transactions happen in seconds, the power drain is not huge.
- *Technology's presence in India*
- Many smart-phones currently on the market already contain embedded NFC chips. The technology is still in its infancy here.

As of now, the Reserve Bank does not recognize NFC mobile payment transactions and PoS terminals accepting NFC payments don't exist. But many NFC-enabled phones are available. For NFC to take off, RBI has to frame norms and banks, carriers, credit card companies, apps developers and PoS terminal makers have to team up.

- *NFC Forum*
- Formed in 2004 promotes sharing, pairing, and transactions between NFC devices and develops and certifies device compliance with NFC standards. There are currently 140 NFC Forum members. They include LG, Nokia, Huawei, HTC, Motorola, NEC, RIM, Samsung, Sony, Ericsson, Toshiba, AT&T, Sprint, Rogers, SK, Google, Microsoft, PayPal, Visa, Mastercard, American Express, Intel, TI, Qualcomm, and NXP.
- *Applications*
- Emerging NFC standards allow users to transfer information by touching devices.
- Social networking
- NFC simplifies and expands social networking options:
- File Sharing, sharing e-Business Cards, sharing e-Money, mobile gaming, Social Networking Sites etc.
- Bluetooth and Wi-Fi Connections
- NFC can be used to initiate higher speed wireless connections for expanded content sharing.

- e-Commerce
- NFC expands e-Commerce opportunities, increases transaction speed and accuracy, while reducing staffing requirements.
- Identity documents
- NFC's short range helps keep encrypted identity documents private.
- ID card: An NFC enabled device can also act as an encrypted student, employee, or personal ID card or medical ID card.
- Keycard: An NFC enabled device may serve as car, house, and office keys.
- Rental Car and hotel keys: NFC rental car or hotel room keys may allow fast VIP check-in and reduce staffing requirements.
- NFC can be deployed in ticketing services, rural banking, interactive and targeted advertising, healthcare, hospitality, libraries and pharmacies. In fact, an NFC phone could become the single-key to access to your car, home and office.
- *How is NFC different from or related to other wireless/RF technologies?*
- Near Field Communication (NFC) is a standards-based, short-range (a few centimeters) wireless connectivity technology that enables simple and safe two-way interactions between electronic devices, allowing consumers to perform contactless transactions, access digital content, and connect electronic devices with a single touch.

- Bluetooth wireless technology was designed to replace cables between cell phones, laptops, and other computing and communication devices within a 10-meter range.
- Wi-Fi technology was designed and optimized for Local Area Networks (LAN); it provides an extension or replacement of wired networks for dozens of computing devices within a +100-meter range.
- ZigBee wireless technology is a standard enabling control and monitoring capabilities for industrial and residential applications within a +100-meter range.
- IrDA is a short range (< 1 meter), line-of-sight communication standard for exchange of data over infrared light. IrDA interfaces are frequently used in computers and mobile phones.
- RFID (Radio Frequency Identification) is an automatic identification method, relying on storing and remotely retrieving data using devices called RFID tags. An RFID tag is a small object that can be attached to or incorporated into a product. RFID tags contain silicon chips to enable them to receive and respond to queries from an RFID reader/writer.
- Contactless smart cards incorporate a chip (microprocessor) that communicates with a card reader through RFID technology. Examples of contactless smart card communications are ISO/IEC 14443 and FeliCa, which allow communications at distances up to 10 cm.
- *NFC v/s Bluetooth*
- NFC and Bluetooth are both short-range communication technologies which are integrated into mobile phones.

Parameter

NFC

Bluetooth

Operation Speed	Slower	Faster
Power Consumption	Less	More
Device-Pairing	Not Needed	Needed
Set Up Time	< 0.1 seconds. Faster than Bluetooth (Standard: < 6 seconds) but Slower than Bluetooth (Low Energy: 0.006 seconds).	
Connection b/w Devices	Automatically established and quickly	Has to be manually Established
Data Transfer Rate	Maximum 424 kbits/sec (Slower)	For V2.1: Max 2.1 Mbits/Sec (Faster)
Power Requirement	< 15mA. Comparatively low power. But NFC power consumption is greater than that of Bluetooth V4.0 Low Energy, this is because illuminating the passive tag needs extra power	< 15 mA. Comparatively Higher (Varies with Class)

Can work with Un-Powered Device	Yes	No
Frequency	13.56 MHz (Lower)	2.4–2.5 GHz (Higher)
Range	< 0.2 m. Shorter: Max. 20 cm. Helps as reduces the likelihood of unwanted interception making NFC particularly suitable for crowded areas where correlating a signal with its transmitting physical device (and by extension, its user) becomes difficult.	~10 m (class 2)
Cryptography	not with RFID	available
Network Type	Point-to-point	WPAN
Network Standard	ISO 13157 etc	IEEE 802.15.1
Standardization body	ISO/IEC	Bluetooth SIG

- **Intellectual Muslims, including Sir Syed Ahmad Khan**, welcomed this patronage to enhance Muslim progress through better education and employment opportunities.
 - Sir Syed Ahmad Khan served as a loyal member of the **British government's judicial service**.
- Following his retirement in 1876, he **joined the Imperial Legislative Council in 1878** and was knighted in 1888.
- He served the British administration before the revolt of 1857. He has also written a pamphlet titled "The Causes of the Indian Revolt" to explain the reasons for the revolt from a Indian perspective.
- "The non-admission of a native as a member into the Legislative Council was the original cause of the out-break (of 1857 revolt)." Sir Syed Ahmad Khan, Asbaab-e-Baghawat-e-Hind, 1859
- **Sir Syed Ahmad Khan: Catalyst for Change – Bridging Tradition and Modernity in 19th Century India**
- **On Religion: Harmony of Faith and Reason in the Evolution of Islamic Thought**
 - Sir Syed Ahmad Khan aimed to **reconcile Western scientific education with the Quran's teachings**, interpreting them in the context of contemporary rationalism and science.
 - Sir Syed Ahmad Khan maintained the Quran's ultimate authority while advocating adaptability with the changing times, asserting that religious tenets were not immutable.
 - Sir Syed Ahmad Khan supported a critical approach, freedom of thought, and discouraged complete reliance on tradition or custom.
- **On Education: Architect of Educational Reform – Empowering Muslims through Knowledge and Progress**

- Sir Syed Ahmad Khan was a devoted educationist. During his official tenure, he established schools in towns, facilitated book translations into Urdu, and founded the **Mohammedan Anglo-Oriental College on the pattern of Oxford and Cambridge universities (later Aligarh Muslim University) in 1875.**
- Sir Syed Ahmad Khan argued that Muslims should prioritize education and employment to catch up with their Hindu counterparts, who had a head start.
- **Champion of Women's Empowerment – Transforming Social Norms in 19th Century India**
 - Sir Syed Ahmad Khan worked to improve the status of women through enhanced education, opposition to purdah and polygamy, advocacy for easier divorce, and condemnation of the Piri and Muridi systems.
- **On Hindu-Muslim Unity:**
 - Sir Syed Ahmad Khan **believed in the fundamental unity of religions** and preached the common interests of Hindus and Muslims.
- **On Politics: Navigating Political Realities – A Strategic Approach to Muslim Engagement in 19th Century India**
 - While actively participating in politics at that time could provoke government hostility toward Muslim masses, he **opposed political involvement by Muslims.**
- **Literary Work: Literary Luminary – Illuminating Social Progress through 'Tahdhib-ul-Akhlaq**
 - Sir Syed Ahmad Khan's progressive social ideas were disseminated through his magazine "**Tahdhib-ul-Akhlaq**" (Improvement of Manners and Morals).

- **A Renaissance of Modern Muslim Identity and Reform in 19th Century India**

- The **Aligarh Movement** represented a liberal, modern trend among Muslim intelligentsia centered around the **Mohammedan Anglo-Oriental College** in Aligarh.

- **The Aligarh Movement**

- Spreading modern education among Indian Muslims without compromising their commitment to Islam.
- Advocating social reforms related to issues such as purdah, polygamy, widow remarriage, women's education, slavery, and divorce among Muslims.
- Followers of the movement embraced a liberal interpretation of the Quran and sought to harmonize Islam with modern liberal culture.
- They aimed to establish a distinct socio-cultural identity for Muslims along modern lines, and Aligarh became a hub for the religious and cultural revival of the Muslim community.

- Sir Syed Ahmad Khan passed away in Aligarh on March 27, 1898, at the age of 80. His biography, "**Hayat-e-Javed,**" was published three years after he died. Shafey Kidwai, a famous scholar and critic, wrote a book about Sir Syed Ahmad Khan called "**Sir Syed Ahmad Khan: Reason, Religion, and Nation.**" He was the most influential Muslim leader in India, and his beliefs influenced the thinking of many Muslims.

26. Vienna convention on diplomatic relations 1961

The **Vienna Convention on Consular Relations (VCCR)** is a multilateral treaty that codifies consular rights and obligations and is the cornerstone of consular relations. The treaty makes it possible for a

country to assist its nationals abroad while respecting the sovereignty of other countries. The VCCR, to a large extent, codified customary international law, and thus represents the most basic principles pertaining to the performance of consular functions.

- **Adoption:** The Vienna Convention was adopted on **14th April 1961 by the United Nations Conference on Diplomatic Intercourse and Immunities** held in Vienna, Austria.
- **Membership:** Currently, 193 countries are parties to this convention.
- **Ratification:** Vienna Convention entered into **force on April 24, 1964, and is nearly universally ratified**, with Palau and South Sudan being the exceptions. India has ratified the convention.
- It entered into force on March 19, 1967.
- **Framework:** Vienna Convention provides a complete framework for the establishment, maintenance and termination of diplomatic relations on a basis of consent between independent sovereign States.
- **Objectives:**
 - **Diplomatic Missions:** Vienna Convention sets out the **special rules, privileges and immunities** which enable diplomatic missions to act without fear of coercion or harassment through enforcement of local laws and to communicate securely with their sending Governments.
 - **Withdrawal of Mission:** It may take place on grounds of economic or physical security and for breach of diplomatic relations which may occur in response to **abuse of**

immunity or severe deterioration in relations between sending and receiving States.

- In either of these cases, a framework is provided for the **interests of each sending State** to be protected in the receiving State by a third State.
- **Concept of “Inviolability”:** It affirms the concept of “inviolability” of a diplomatic mission, which has been one of the **enduring cornerstones of international diplomacy.**
- **Accountability of Host Nation:** The convention ensures that the security of any **High Commission or Embassy is the responsibility of the host nation.**
 - While diplomatic missions can also employ their own security, ultimately, the host nation is accountable for security.

• **Key Provisions of the Vienna Convention on Diplomatic Relations:**

• **Provision**

• **Description**

- **Authority of the Host State (Article 9)**

State (persona non grata) from entering or remaining in the host State.

The host State can expel the envoys.

- This person could be the head of mission, member of the diplomatic staff, or any

	<ul style="list-style-type: none">• Inviolability of Mission Premises (Article 22)• Free communication (Article 27)• Inviolability of the person of diplomatic agents (Article 29)• Immunity from Jurisdiction (Article 31) <p>other member of the mission.</p> <ul style="list-style-type: none">• · The premises of a diplomatic mission are inviolable and may not be entered by the authorities of the receiving State without the consent of the head of mission.• · A diplomatic mission has the right to communicate freely with its government by all appropriate means, including diplomatic couriers and messages in code or cipher.• · Diplomatic agents are inviolable and may not be arrested or detained by the authorities of the receiving State.• · Diplomatic agents are immune from the criminal jurisdiction of the receiving State and,
--	--

with certain exceptions, from its civil and administrative jurisdiction.

- **Tax and customs exemptions (Articles 34 and 36)**
 - under Vienna Convention Diplomatic agents are exempt from direct taxes and customs duties.
- **Vienna Convention's Impact: Case Studies from the Cuban Missile Crisis and the Iranian Hostage Crisis**
- The Vienna Convention has played an important role in a **number of international crises**, including the **Cuban Missile Crisis and the Iranian hostage crisis**.
- **Cuban Missile Crisis:**
 - The Convention established a **direct communication link** between President Kennedy and Soviet Premier Khrushchev, which helped to de-escalate the crisis.
 - The convention was used to **guarantee the safety of US diplomatic personnel in Cuba**, even though the US embassy in Havana had been closed.
 - It was used to ensure that the **Soviet Union would withdraw its nuclear missiles from Cuba**.
- **Iranian Hostage Crisis:**
 - The Vienna Convention was **used to protect the interests of the United States and its citizens in Iran**, even though the US embassy in Tehran had been overrun by Iranian revolutionaries.

- It was used to ensure that the Iranian government would provide food and medical care to the US hostages.
- It was used to negotiate the release of the US hostages.

- **Contemporary Challenges in Diplomatic Immunity and the Vienna Convention**

- **Diplomatic Immunity Abuse:**

- There have been instances where diplomats and their families have abused diplomatic immunity, leading to a lack of respect for the laws and regulations of the host country.
- This includes **offenses like traffic violations**, which often go unpunished due to immunity protections.

- **Diplomatic Crimes:**

- Diplomats have been involved in various criminal activities, including but not limited to drunk driving, **assault, child abuse, possession of deadly weapons, bribery, slavery, money laundering, rape, and murder**.
- Diplomatic immunity can sometimes shield them from prosecution, leading to diplomatic tensions between countries.

- **Exploitation of Domestic Workers:**

- Individuals, especially women from low-income countries, working as domestic employees in diplomats' residences, have been subjected to abuse and exploitation.
- Diplomatic immunity has sometimes been misused to evade legal consequences for these crimes.

- **Disputes Over Interpretation:**

- There have been disputes and differences in the interpretation of the Vienna Convention's provisions between countries.
- This can **lead to diplomatic standoffs and challenges** in resolving legal issues related to diplomatic immunity.
- **Sovereignty Concerns:**
 - Host countries may sometimes perceive the Vienna Convention as **impinging on their sovereignty**, especially when diplomats engage in activities that are considered detrimental to the host nation's interests.
 - Striking a balance between respecting diplomatic privileges and ensuring national security can be challenging.
- **Changing Nature of Diplomacy:**
 - The nature of diplomatic missions has evolved with advancements in technology and communication.
 - Addressing modern **challenges such as cybercrimes and digital espionage** within the framework of the Vienna Convention presents new complexities.

- **Diverse Vienna Conventions: Roles and Significance in International Law**
- **Vienna Convention on Consular Relations (1963):**
 - This convention outlines the rights and privileges of consular officers in the receiving state.
 - It covers various aspects of consular relations, including consular notification, access to nationals, and consular functions.
- **Vienna Convention on the Law of Treaties Between States and International Organizations or Between International Organizations (1986):**
 - This convention governs treaties between states and international organizations or between international organizations.
 - It sets out the rules and procedures for the formation, amendment, and termination of treaties among states and international organizations.
- **Vienna Convention for the Protection of the Ozone Layer (1985):**
 - This convention addresses the **protection of the ozone layer** by regulating the production and consumption of substances that deplete the ozone layer.
 - It led to the **development of the Montreal Protocol**, an international treaty aimed at phasing out the production and use of ozone-depleting substances.
- **United Nations Convention Against Illicit Traffic in Narcotic Drugs and Psychotropic Substances (1988):**

- Commonly known as the **Vienna Convention against Illicit Traffic in Narcotic Drugs**, this treaty aims to combat drug trafficking and related offenses internationally.
- It establishes measures for the extradition of drug traffickers, mutual legal assistance, and controlled substances.
- **Vienna Convention on Succession of States in Respect of Treaties (1978):**
 - This convention addresses the issues related to state succession concerning treaties.
 - It **outlines the principles and procedures for the continuation, succession, and termination of treaties** when states undergo changes in their sovereignty, such as through independence, merger, or division.
- **Vienna Convention on the Law of Treaties Between States and International Organizations or Between International Organizations (1986):**
 - This convention deals specifically with treaties concluded between states and international organizations or between international organizations.
 - It outlines the **legal framework for such treaties, including their formation, interpretation, and termination.**

27. Genome editing and Genetically modified organisms

The central government has paved the way for easy introduction of genome edited crops. The government has clearly distinguished such crops from genetically modified crops and has prescribed relatively easier norms for their introduction. The change in rules will **allow genome-edited plants, or organisms without any “foreign” genes** to be subjected to a different regulatory process than the one applied to those genetically engineered products with "foreign" genes.

Genome editing

- Genome is the complete genetic information of an organism and genome editing is a type of genetic engineering in which DNA is inserted, deleted, modified or replaced in the genome of a living organism.
- Genome editing targets the insertions to site specific locations.

Genome editing in agriculture:

- In the field of genome engineering, “CRISPR” or “CRISPR-Cas9” is used as a tool to target specific stretches of genetic code and to edit DNA at precise locations.
- Using this tool, genome editing can be used to insert specific traits in the gene sequence.
- The agriculture scientists has used this genome editing tool to bring the desired changes in the genome by using site directed

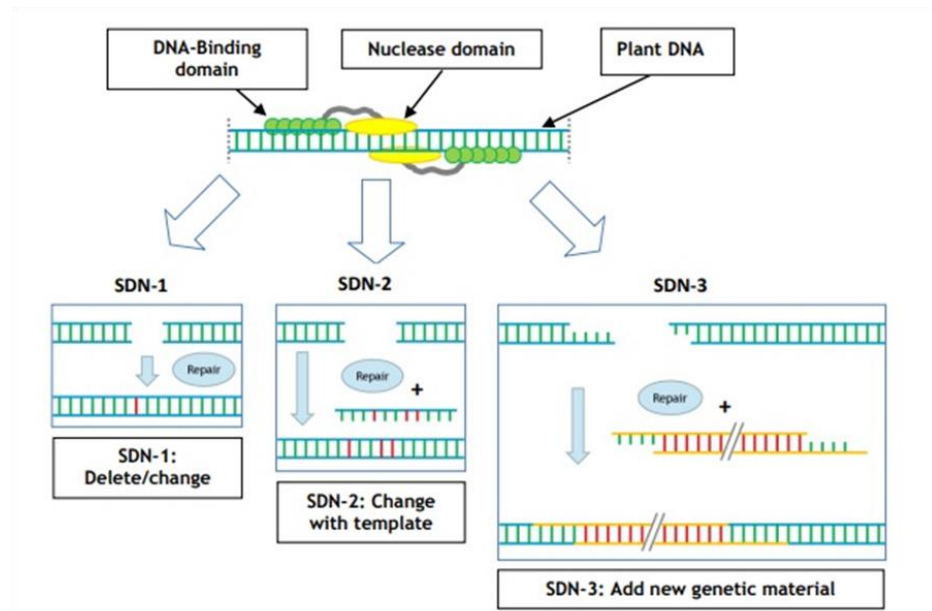
nuclease (SDN) or sequence specific nuclease (SSN). Nuclease is an enzyme which cleaves through nucleic acid.

- **Categories**

- Depending on the nature of the edit that is carried out using site directed nuclease (SDN), the process is divided into three categories:

- SDN1: It introduces changes in the host genome's DNA through small insertions/deletions without introduction of foreign genetic material.
- SDN 2: It produces a double-stranded break, and the break is repaired by the cell where a small nucleotide template is supplied that is complementary to the area of the break, which is used by the cell to repair the break.
- SDN3: It induces a double-stranded break in the DNA, but is accompanied by a template containing a gene or other sequence of genetic material. The cell's natural repair process then utilizes this template to repair the break; resulting in the introduction of the genetic material. This process involves larger DNA elements or full length genes of foreign origin which makes it similar to genetically modified

organisms (GMO) development.



- Both SDN1 and SDN2, does not involve alien genetic material and the end result is indistinguishable from conventionally bred crop varieties.
- **Genome editing and Genetically modified organisms**
- Genetically modified organisms(GMO) involve modification of the genetic material of the host by introduction of a foreign genetic material.
- In the case of agriculture, soil bacteria is the best mining source for such genes which are then inserted into the host genome using genetic engineering.
 - For example, in case of cotton, introduction of genes cry1Ac and cry2Ab mined from the soil bacterium Bacillus Thuringiensis (BT) allow the native cotton plant to generate

endotoxins to fight pink bollworm naturally.

- BT Cotton uses this advantage to help farmers naturally fight pink bollworm which is the most common pest for cotton farmers.
- The basic difference between genome editing and genetic modification in this context is that while the former does not involve the introduction of foreign genetic material, the latter does.
- In the case of agriculture, both the techniques aim to generate variants which are better yielding and more resistant to biotic and abiotic stress.
- **Need to distinguish the crops:**
- Scientists both in India and across the world have drawn the line between Genetically Modified (GM) crops and genome edited crops.
- The latter has no foreign genetic material in them which makes them indistinguishable from traditional hybrids.
- So, the Environment Ministry has exempted genome edited crops through SDN 1 and SDN 2 process from stringent regulatory processes that are applied for GM crops.

- For SDN1 and SDN2 processes, the government will instead rely on reports of Institutional Biosafety Committee to exclude exogenous genetic material.
 - The institutional biosafety committees are expert committees to deal with research and release of GM material. Such committees would now be entrusted to certify that the genome edited crop is devoid of any foreign DNA.
- This will allow such genome-edited plants without the need for GMO regulation at the Genetic Engineering Appraisal Committee (GEAC).
- This would be a less cumbersome and time consuming process for commercial release of such genome edited crops.
- **Institutional Biosafety Committee**
- In India, the manufacture, import, research and release of Genetically Engineered Organisms (GEOs), as well as products made by the use of such organisms are governed by "The Rules for Manufacture, Use, Import, Export and Storage of Hazardous Micro-Organisms, Genetically Engineered Organisms or Cells, (commonly referred to as "Rules 1989")" notified by the Ministry of Environment, Forest and Climate Change (MoEF&CC) under the Environment (Protection) Act 1986.
- According to these rules, the Institutional Biosafety Committee (IBSC) shall be constituted by all institutions handling hazardous microorganisms and/or GE organisms. The Committee will be the

nodal point for implementation of the biosafety guidelines and for the interactions within the institution.

28. Indian Rock System

The geological structure of a country helps in **understanding the types and character of rocks and slopes, the physical and chemical properties of soils, the availability of minerals, and the surface and underground water resources.**

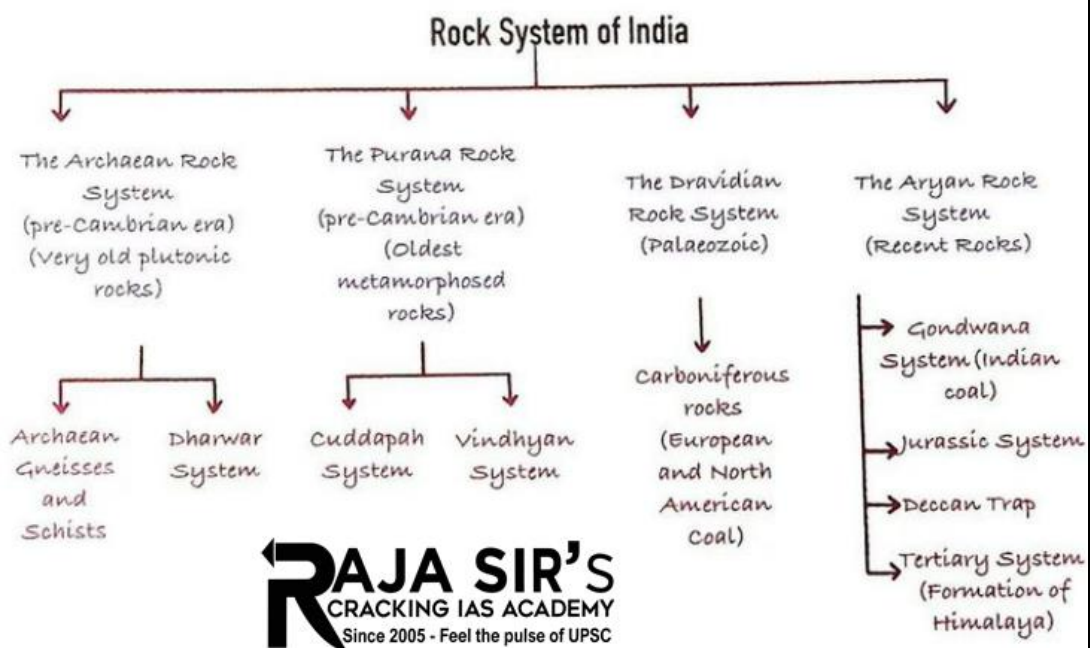
Indian Rock System

- **Geological Structure:** Geological structure is most commonly (and best applied) to the **arrangements and deposition of the rocks in the earth's crust**, as a result of (or absence of) earth movements; but also applied to the morphological features (morphology) of rocks; e.g. Gondwana structure.
- **Geological Time Scale: Chronological dating of various geological formations** (Geological strata) and life according to their time and place of origin, evolution, and extinction. "**Giovanni Arduina** developed Geological Time Scale in 1760". Standard Geological Time Scale developed in International Geological Congress held in 1881, Italy.
- The **Indian Geological Time Scale, advocated by T.S. Holland.**
- **Geological History of India:** The Geological Structure & rock systems of India analyzed with reference to their geographical locations and their geological history. The following physiographic divisions of India are used for referencing the geological formations:
 - Peninsular India;

- Extra Peninsular India

- **Major events in the geological history of India:**

- **Peninsular India** was a part of the old landmass since the formation of the Earth's Crust
- The **upheaval of the Himalayas** in the **tertiary period**.
- **Aggradational formation of the Indo-Gangetic plain during the Pleistocene period**. It continues till today through sedimentation in the floodplains of the rivers and the lower part of the Gangetic plain.



Based on this complex and varied geological history, the **Geological Survey of India** has classified rock systems of the country into **4 major divisions:**

- **The Archaean Rock System**
- **The Purana Rock System**
- **The Dravidian Rock System**
- **The Aryan Rock System**

- **Archaean Rock System (Pre-Cambrian Rocks)**
- The **earliest phase of tectonic evolution was marked by the cooling and solidification of the upper crust of the earth's surface in the Archaean era** (prior to 2.5 billion years; Precambrian Period) which is represented by the exposure of gneisses and granites, especially on the **Peninsula**.
- These form the core of the Indian Craton (Block of Indian Subcontinent of Gondwanaland).
- The term '**Archaean**' introduced by **J.D. Dana in 1782**, refers to the oldest rocks of the earth's crust.
- The Archaean group of rocks consists of two systems-
 - (a) **Achaean System**: Granites and Gneisses,
 - (b) **Dharwar System**: First Sedimentary Rocks
- **Gneiss** — Mineral composition varies from granite to gabbro.
- **Schists** — mostly crystalline, include mica, talc, hornblende, chlorite, etc.
- **Archaean Gneisses and Schists**
- **These rocks are:**
- **Oldest rocks** [pre-Cambrian era] [formed about 4 billion years ago].
- Rocks formed due to the solidification of molten magma – the earth's surface was very hot then.
- Known as the '**Basement Complex**' [They are the oldest and forms the base for new layers]
- Azoic or unfossiliferous,
- Foliated (consisting of thin sheets),
- Thoroughly crystalline (because they are volcanic in origin),
- **Plutonic intrusions** (volcanic rocks **found deep inside**).
- **Dharwar System**

- Formation period ranges from 4 billion years ago to – 1 billion years ago.
- Highly **metamorphosed sedimentary** rock-system. [formed due to metamorphosis of sediments of Archaean gneisses and schists].
- They are the **oldest metamorphosed rocks**.
- Found in abundance in the Dharwar district of Karnataka.
- **Economically the most important rocks** because they possess valuable minerals like high-grade **iron-ore, manganese, copper, lead, gold, etc.**
- **Purana Rock System**
- The **Cuddapah and Vindhyan rock systems are together known as the Purana rock system.**
- They are **formed by the erosion and deposition of Archean and Dharwar rocks**, the process is believed to have taken place between **1400-600 million years ago.**
- They are mostly **sedimentary in nature.**
- **Cuddapah System**
- Named after the Cuddapah district of Andhra Pradesh, due to the large development of outcrops of cudappah rocks
- They were **formed when sedimentary rocks like sandstone, limestone etc., and clay were deposited in synclinal folds** (between two mountain ranges).
- Outcrops best observed in Cuddapah district of Andhra Pradesh.
- These rocks contain ores of iron, manganese, copper, cobalt, nickel, etc.
- They **contain large deposits of cement grade limestones.**
- **Vindhyan System (1300-600 million years)**
- This system derives its name from the great Vindhyan mountains.

- The system comprises of **ancient sedimentary rocks** (4000 m thick) superimposed on the Archaean base.
- Mostly **Unfossiliferous rocks** and a **large area of this belt is covered by the Deccan trap**.
- The Vindhayan system have **diamond-bearing** regions from which **Panna** and **Golconda diamonds** have been mined.
- It is **devoid of metalliferous minerals** but provides large quantities of durable stones, ornamental stones, limestone, pure glass making sand, etc.
- **Dravidian Rock System (Palaeozoic)**
- The **Paleozoic rock formation is known as Dravidian systems** in India; during the Paleozoic era i.e., 600-300 million years ago. It is also known as the Carboniferous rocks System due to **high-quality Coal formation** in the World.
- These rocks are mostly **found in the extra-Peninsular regions of the Himalayas and the Gangetic plain** and are very little in the Peninsular shield (Umara in Rewa).
- PirPanjal, Handwara, Lidar valley, Annatnag of Kashmir, Spiti, Kangra & Shimla region of Himanchal Pradesh Gharwal & Kumayun of Uttarakhand are the major region of Dravidian rocks.
- The Dravidian rocks mainly include **shales, sandstones, clays, quartzites, slates, salts, talc, dolomite, marble, etc.**
- It is the period when Pangaea was broken and the Tethys Sea came into existence.
- It marks the beginning of life on the earth's surface. The rocks of this is the period saw plenty of fossil evidences.
- These are seen in all geological formations from this period. They also indicated marine conditions in these Paleozoic rocks in India.

- The **Dravidian period was the beginning of coal formation ((high-Quality Carboniferous coal))** but these formations were not found abundantly in India.
- The Dravidian system of geological formations includes the rocks of the following geological ages:
 - The Cambrian System;
 - The Ordovician Systems;
 - The Silurian System;
 - The Devonian System (fossils & corals) &
 - The **Carboniferous Systems** (Lower & Middle Carboniferous system).
- **Carboniferous rocks (350 million years)**
- The Carboniferous rocks (350 million years) comprise mainly of limestone, shale, and quartzite.
- **Mount Everest** is composed of Upper Carboniferous limestones.
- **Coal formation** started in the Carboniferous age.
- Carboniferous in geology means **coal-bearing**. [most of the coal found in India is not of the Carboniferous period; High-quality coal of **Great Lakes Region-USA, U.K and Ruhr** region is Carboniferous coal].
- **Aryan Rock System**
- The beginning of the **Upper Carboniferous period is known as the Aryan Group**, has come to the threshold of the last, longest, and **most eventful era**, extending from Upper Carboniferous to the **Holocene period**.
- The Aryan Group of Rock Formation classified in the following Group:
 - **Upper Paleozoic Era**— Upper Primary Epoch– Upper Carboniferous & Permian Period formation

- **Mesozoic Era**—Secondary Epoch -Triassic, Jurassic & Cretaceous period Formation(Gondwana Rock system, Deccan trap, Jurassic system)
- **Cenozoic Era**—Tertiary Epoch – Paleocene, Eocene, Oligocene-Miocene & Pliocene Period
- **Neozoic Era**— Quaternary Epoch– Pleistocene & Holocene/recent Period.

- **Gondwana System**

- The **Gondwana System** [derives its name **Gonds**, the most primitive people of Telangana and Andhra Pradesh]
- They are deposits laid down in **synclinal troughs** on ancient plateau surface.
- As the sediments accumulated, the loaded troughs subsided.
- Fresh water and sediments accumulated in these trough and terrestrial plants and animals thrived.
- This happened since Permian period (250 million years ago).
- **Gondwana Coal**
- Gondwana rocks contain nearly **98 per cent of India's coal reserves**.
- Gondwana coal is **much younger** than the Carboniferous coal and hence it's carbon content is low.
- They have rich deposits of iron ore, copper, uranium and antimony also.
- Sandstones, slates and conglomerates are used as building materials.
- **Jurassic System**
- The marine transgression in the latter part of the Jurassic gave rise to thick series of **shallow water deposits** in Rajasthan and in Kuchchh.

- Coral limestone, sandstone, conglomerates and shales occur in Kuchchh.
- Another transgression on the east coast of the Peninsula is found between **Guntur and Rajahmundry**.
- **Deccan Trap**
- Volcanic outburst over a vast area of the Peninsular India from the end of the **Cretaceous** till the beginning of the **Eocene** gave rise to Deccan Traps.
- **Basaltic lava** flowed out of fissures covering a vast area of about **ten lakh sq km**.
- These volcanic deposits have flat top and steep sides and therefore called '**trap**' meaning a 'stair' or 'step' in Swedish.
- The process of weathering and erosion (denudation) since millions of years has reduced the Deccan Trap to almost half of its original size.
- Present Deccan Trap covers about **5 lakh sq km** mainly in parts of Kuchchh, Saurashtra, Maharashtra, the Malwa plateau and northern Karnataka.
- Thickness of the Deccan Traps is 3,000 metres along the west which is reduced to 600-800 metres towards the south, 800 metres in Kuchchh and only 150 metres at the eastern limit.
- The weathering of these rocks for a long time has given birth to **black cotton soil** known as '**regur**'.

Deccan Trap and Paleontological Murder Mystery

- Some scientists believe that a series of monumental volcanic eruptions in India may have killed the dinosaurs 65 million years ago, not a meteor impact in the Gulf of Mexico. The eruptions, which created the gigantic Deccan Traps lava beds of India, are

now the prime suspect in the most famous and persistent paleontological murder mystery, say scientists who have conducted a slew of new investigations honing down eruption timing. The main phase of the Deccan eruptions spewed 80 percent of the lava which spread out for hundreds of miles. It is calculated to have released ten times more climate altering gases into the atmosphere than the nearly concurrent Chicxulub meteor impact, according to volcanologist Vincent Courtillot.

The **Deccan Trap has been divided into three groups:**

Group	Found in	Inter-trappean beds	Layers of volcanic ash
The Upper Trap	Maharashtra and Saurashtra	Present	Present
The Middle Trap	Central India and Malwa	Very rare to absent	Present
The Lower Trap		Present	Very rare to absent

Tertiary System

- **Eocene to Pliocene about 60 to 7 million years ago.** Characterized by two events- the **final breaking up the old Gondwana land** and the **upliftment of Tethys geosynclines or Himalayas.**

- The tertiary is the most significant period in India's geological history because the **Himalayas** were born and India's present form came into being in this period.
- The Tertiary Succession are fully spread over the Bengal and Ganges delta, East coast, and the Andaman Islands. They are also found in the Salt Range, Potwar Plateau, outer Himalayan regions of Jammu and Punjab, Assam, Sind, and Baluchistan. Important rock systems include Karewas of Kashmir, Bhangra, and Khadar of the Gangetic plains, etc.
- The geology history of India saw unique and diverse character. Different regions of India contain rocks belonging to different geologic periods. The Indian Craton was once part of the supercontinent of Pangaea.
- **After the breaking of the Gondwanaland craton (225 my ago) and sliding towards the Eurasian craton, the Himalayan mountain region came into existence (65 my ago).**
- After a succession of Outer Himalayas wide spread alluvial plain formation began in upper Pliocene & Pleistocene period as the Indo- Ganga- Brahmaputra plain region. **Thus different parts of India contain rocks of almost every type of geological structure of different geologic periods.**
- The stratigraphy of India can be divided into several divisions such as **Archean System, Dharwar System, Cudappah system, Vindhyan system, Dravidian system, and Aryan system** (Gondwana, Jurassic, Deccan Trap, Tertiary and Quaternary rocks).
- **India is marked by the oldest rocks to the newest alluvial formations, found in the these geological stratum of India.** The **oldest rocks of the Archaean period are found in**

peninsular India. Sedimentary rocks are found in the land formed by the deposition of sediments from the Indo- Gangetic plains. Different sedimentary and metamorphism rocks also trace in the Great folded mountainous region.

29.Jain Art and Architecture

Jain Architecture

- The elements of Jain architecture are characterized by their simplicity, elegance, and emphasis on symmetry and proportion.
- With regard to architecture, the Jains adopted the local building traditions of **Vaishnava** and **Dravidian styles** while evolving their style.
- The exquisite Jain architecture consists of caves, temples, monasteries and other structures.
- In ancient times, they received great patronage under the ruling dynasties of **Cholas, Pallavas, Chalukyas, Rashtrakutas** and other kingdoms.

Types of Jain architectures

1. Stupa (Chaitya)
2. Layana (Caves)
3. Jinalaya (Temples)

Stupa (Chaitya)

The Jains erected them for **devotional purposes.**

The earliest Jain stupa was built in the 8th century BCE, before the Jina **Parsvanatha.**

Structure: Jain stupa has a peculiar cylindrical three-tier structure that is quite reminiscent of the **Samavasarana**, by which it was replaced as an object of worship.

As used in Jain inscriptions, the name for a stupa is the standard word "**thupe**".

Mathura Jain Stupas: A Jain stupa dated to the 1st century BCE-1st **Kankali Tila mound** century CE was excavated at **Mathura** in the 19th century, in the .

Ayagapatas: The Jain devotional reliefs, called Ayagapatas, show a probable design of the Jain stupa.

The stupa drum is set on a high platform and accessed by a flight of stairs and an ornate torana gate, quite similar in style to the toranas of **Sanchi**.

The drum of the stupa is elongated and cylindrical and formed of three superposed tiers separated by railings and decorated bands.

The platform may have been squared, with **Persepolitan-type columns** in each corner.

On the **Vasu Ayagapata**, one of the Persepolitan pillars is surmounted by a **Dharmachakra wheel**, and the other pillar was probably surmounted by an animal, as seen in other similar Ayagapatas.

Layana (Caves)

- Caves, the earlier architecture found in **Maharashtra**, are of the **Digambara Jain sect**.
- These are found from the 6th century during the **Chalukya period** and continued during the **Rashtrakuta period**.
- **Rock-cut architecture:** The method of building a structure by cutting it out of raw is known as rock-cut architecture.
- It is done by excavating solid rock where it naturally exists to create structures, buildings, and sculptures.
- **Temples, tombs, and caves** were the principal rock-cut architecture applications.

Jain Caves	
Caves	Description
<p>Ellora Caves (Maharashtra)</p>	<p>Cave numbers 30-35 at Ellora are Jain caves carved in the 10th century.</p> <p>These caves belong to the Digambara sect. All of the Ellora monuments were built during the Rashtrakuta dynasty.</p> <p>Emphasis is placed on the depiction of the twenty-four Jinas.</p> <p>The Jain caves contain some of the earliest Samavasarana images among their devotional carvings.</p> <p>Pairing of sacred figures in Jainism, specifically Parsvanatha and Bahubali.</p> <p>Other artworks of significance include those of the deities Sarasvati, Sri, Saudharmendra, Sarvanubhuti, Gomukha, Ambika, Cakresvari, Padmavati, Ksetrapala, and Hanuman.</p>
<p>Udaygiri Caves (Odisha)</p>	<p>There are 18 caves in Udayagiri, and the most important is Rani Gumpha.</p> <p>This cave is occupied by the Queen of Lalakendu, Kesari.</p> <p>It contains scriptures depicting the victory march of King Kharavela.</p> <p>Ganesh Gumpha Cave: Carvings in this cave tell the story of the Princess of Ujjayini with King Udayana of Kausambi</p>

This cave has two giant statues of elephants carrying garlands at the entrance.

The monument is a **rock-cut monastery** or temple. Created by Tamil Sramana, it is called the **Arivar Koil** and is a rock-cut cave temple of the **Arihant**. It contains remnants of notable **frescoes** from the 7th century.

Sittanavasal

Caves (Tamil Nadu)

Ancient structures such as **Gol Gumbaz, Talagirisvara Temple**, and this one are claimed to be relatively unappreciated.

The Sittanavasal Cave is listed as one of the **Adarsh Smarak Monuments** by the Archaeological Survey of India.

The temple cave was initially dated to **Pallava King Mahendravarman I** (580–630 AD) before converting from Jainism to Hinduism as a Shaivite.

Jain caves

Jinalaya (Temples)

- Jain temple architecture is a style of temple architecture that developed as a part of Jainism. This ancient Indian religion emphasizes on non-violence and respect for all living things.
- Each element of Jain temples, like **Mandapa, Garbhagriha, Mukhmandapa, Shikhar, Devakoshta** etc, are designed to create a peaceful and harmonious atmosphere for meditation and worship.
- **Some key elements of Jain temple architecture include:**
- Jain temples have **numerous pillars** with a well-designed structure, forming squares.
- The squares thus formed create chambers, which are used as small chapels and contain the **image of a deity**.

- From these pillars, there are **richly carved brackets** that emerge at about two-thirds of their height.
- The only architectural variation specific to Jain temples is the frequently seen four-faced or **Chaumukh design**.
- **Types of Jain temples:** There are mainly two types of Jain temples: **Shikar-bandhi Jain temple and Ghar Jain temple**.

Features	Shikar-bandhi Jain temple	Ghar Jain temple
Size of temple	They are more traditional and large temples.	These are smaller, more intimate temples meant to be used as personal shrines within a household.
Structural features	Dome-like structure (Shikhar) on top. These temples often have multiple levels and large, elaborate entrance halls (mandapas) with intricate carvings and sculptures They have many marble pillars carved beautifully with demi-gold posture.	These temples do not have a dome and are typically less ornate than Shikar-bandhi temples.
Serves as	The central shrine in a Shikar-bandhi temple houses an image of a Tirthankara , and the temple serves	They are used for daily prayers and rituals.

as a gathering place for Jain devotees.

Types of Jain temples

Jain Temples	Location	Significance
Ranakpur Jain Temple	Rajasthan	The Ranakpur Temple, built in the 15th century , is a renowned Jain pilgrimage site and an internationally recognized architectural marvel. The Chaturmukha Temple, dedicated to Adinath, the first Jain Tirthankara , is its most notable feature.
Gomateshwara Temple	Karnataka	The Bahubali Temple , also known as Gomateshwara Temple, in Shravanabelagola , is renowned for its colossal Bahubali statue and its intricate carvings depicting the revered Tirthankaras .
Dilwara Temple	Rajasthan	There are two major temple complexes . One was built around 1030 A.D. by Vimala Shah , dedicated to the first Tirthankara. The second one was dedicated to the Tirthankara Neminatha and was founded around 1230 A.D. by Tejapala .

	<p>Sri Digambar Temple</p> <p>Delhi</p>	<p>Each temple complex stands in a rectangular walled area decorated with statues in niches around the circumference.</p> <p>They are famous for using pure white marble and intricate marble carvings.</p> <p>The Sri Digambar Temple, believed to have been constructed during the Mughal era, is dedicated to Parshvanatha, the 23rd Jain Tirthankara.</p>
	<p>Palitana Temple</p> <p>Gujarat</p>	<p>The Palitana Temples, originally built in the 11th century and completed over 900 years, hold significant religious importance as they are dedicated to Adinath, the first Tirthankara of Jainism.</p>
	<p>Sonagiri Temple</p> <p>Madhya Pradesh</p>	<p>Sonagiri Temple, a prominent pilgrimage site for the Digambar Jain community, houses an 11-foot-tall statue of Chandraprabha, the 8th Tirthankara, depicted in a meditative posture.</p>
	<p>Kulpakji Temple</p> <p>Telangana</p>	<p>Kulpakji Temple, dating back to the 10th century, is a revered Jain pilgrimage site in Telangana, known for its historical significance for the Svetambar community under the Kakatiya Dynasty.</p>
	<p>Dharmanath Temple</p> <p>Kerala</p>	<p>Dharmanath Temple, more than a century old, is a revered Jain religious site in Kerala, reminiscent of the architectural style of Mount Abu's Dilwara Temples.</p>

Shikharji Temple	Jharkhand	Shikharji Temple, situated in Jharkhand's Parasnath Hills , is a sacred site revered for the salvation of 20 Tirthankaras , renowned for its intricate murals and ancient Sanskrit inscriptions .
Hanumantal Bada Jain Temple	Madhya Pradesh	The historical Hanumantal Jain Temple in Jabalpur , established in 1686 and renovated in the nineteenth century , is among the largest Jain temples in India , featuring 22 shrines dedicated to various deities.
Parshvanatha Temple	Madhya Pradesh	The Parshvanatha Temple in Khajuraho , constructed in the 10th century , now dedicated to Lord Parshvanatha , showcases intricate architecture and has been designated as a UNESCO World Heritage Site .
Saavira Kambada Temple	Karnataka	The Saavira Kambada Temple, also known as the ' Chandranatha Temple ,' is celebrated for its seven pavilions supported by fine granite pillars , dedicated to Chandraprabha, the eighth Tirthankara .
Badami Cave Temple	Karnataka	The Badami Cave Temples, dating back to the 6th century , represent ancient Indian rock-cut architecture , with four cave temples crafted during the Chalukya dynasty's reign.
Ellora Jain Caves	Maharashtra	Ellora Jain Caves, carved intricately around the 9th century , showcase the religious diversity of the Ellora site, featuring elaborate carvings

			of Mahavira, Parshvanatha, and Bahubali , among others.
Navagraha Temple	Karnataka		The Navagraha Jain Temple, overseen by Sri Gunadhar Maharaj since 2005 , boasts a 61-foot-tall monolithic figure of Parshvanatha , ranking as one of the Jain community's tallest statues .
Bawangaja Temple	Madhya Pradesh		Bawangaja Temple, a grand complex with eight magnificent Jain temples dating from the 12th century , houses an impressive 84-foot megalithic figure of Adinath , regarded as India's tallest Jain statue .
Girnar Temple	Gujarat		The Girnar Temples, revered by both Digambara and Shwetambara Jain groups, hold significant spiritual importance, with Mount Girnar being a renowned pilgrimage site linked to the death of Lord Neminath, the 22nd Tirthankara .
Sri Humcha Temple	Karnataka		Sri Humcha Temple, tracing its history back to the 7th century , is esteemed as the final resting place of Devi Padmavati , housing one of the holiest shrines for the Jain community worldwide, attributed to the efforts of Shri Jindatt .
		Paintings	

One facet of Jain art is painting, generally known as **miniature paintings** because most pictures are rendered in small sizes. Jain miniature paintings were developed all over India in the 7th century A.D. and reached maturity during the 15th century A.D.

Jain Paintings

The work on walls or solid structures is called **murals**. The manuscript text most frequently illustrated is the **Kalpa Sutra**, which contains the biographies of the Tirthankaras, notably Parshvanatha and Mahavira.

Mural Paintings

The illustrations are square-ish panels set in the text, with "wiry drawing" and "brilliant, even jewel-like color". Rishabha, the first Tirthankara, is usually depicted in either the **lotus position or kayotsarga**, the standing position.

The Western Indian style prevailed in the region comprising **Gujarat, Rajasthan, and Malwa**.

Features: certain physical traits, such as eyes, breasts and hips, are enlarged.

Western Indian style of painting

Figures are flat, with the angularity of features and the further eye protruding into space.

- palm-leaf was used for the manuscripts.

The **Kalpasutra and the Kalakacharya-Katha**, the two very popular Jain texts, were repeatedly written and illustrated with paintings.

Sittanavasal Paintings

Famous for its **fresco-secco technique** with many mineral colors.

	<p>The painting themes depict a beautiful lotus pond and flowers, people collecting lotuses from the pond, two dancing figures, lilies, fish, buffaloes, and elephants.</p> <p>The paintings are on the theme of Jain Samasvasarana, the most attractive heavenly pavilion, referring to the attainment of Nirvana and Khatika Bhumi.</p> <p>They are large groups of Jain temples.</p> <p>These temples were built in and after the 11th century CE.</p> <p>It is one of the most sacred sites of the Svetambara tradition.</p> <p>The main temple is dedicated to Rishabhdev.</p> <p>Numerous temples are considered sacred in Jainism.</p> <p>It enshrines images of Tirthankaras in several postures, including Padmasana and Kayotsarga.</p> <p>In 2016, the Statue of Ahimsa, a 108 ft idol carved in monolithic stone, was consecrated here, and it is recorded in the Guinness Book of World Records as the tallest Jain idol in the world.</p> <p>Ram and Hanuman attained moksha from Mount Mangi Tungi.</p> <p>It is located on Parasnath Hill.</p>
--	---

Temples (Gujarat)

Mount Mangi Tungi (Maharashtra)

Shikharji (Jharkhand)

Khajuraho Group of Monuments (Madhya Pradesh)

important Jain Tirtha by both Digambara and Svetambara.

It is where **twenty of the twenty-four Jain Tirthankaras attained Moksha.**

The current structure of temples at Shikharji was rebuilt by **Jagat Seth** in 1768 CE.

They are a group of Hindu and Jain temples.

The Jain temples are located in the **east-southeast region of the Khajuraho monuments.**

Most were built between 885 CE and 1000 CE by the **Chandela dynasty.**

The temples are famous for their **Nagara-style architectural** symbolism and a few erotic sculptures.

They are a **UNESCO World Heritage Site.**

Jain Sculptural Reliefs

- The brilliance of the Jain sculptures can be seen from the delicate images of the **Jain Tirthankaras.** The sculpture can depict any of the twenty-four Tirthankaras, with images depicting **Parshvanatha, Rishabanatha, or Mahavira** being more popular.
- **Mathura School of Sculptures:**
- This school was developed around **Mathura**, an important city on the Uttarapatha and the second capital of the **Kushanas.**
- The images discovered here belong to all three religions: Buddhism, Brahmanism and Jainism.

- These were created using **red spotted sandstone**, readily available in the nearby Aravalli region.

- **Features of Jain sculptures in Mathura school:**

- They depict Jina in a seated or standing pose.
- The standing Jina is straight, with hands long enough to reach the knee.
- The seated Jina is in **padmasana** (lotus position or cross-legged posture) with hands in **dhyana mudra**. They are generally nude.
- Jaina venerates 24 Tirthankaras who are distinguished by different emblems on their throne or chest: **a lion for Mahavira, a bull for Rishabh** etc.
- They also donated reliefs to the stupa, known as **ayagapatas**, in the form of square slabs depicting Jina stupa, **swastika**, twin fish symbols, various scenes etc.
- Jain sculptures have been recovered from a ruined stupa at **Kankali Tila**.
 - Kankali Tila is a mound located in **Mathura**.
 - Numerous Jain sculptures, Ayagapattas, and pillars were found here during excavations.
- **Examples of Jain Sculptures**
- **Lohanipur torso:** It is a polished sandstone statue in **Patliputra**, Bihar, representing a Jain Tirthankara in a damaged state.
- **Gopachal rock-cut Jain monuments:** located around the walls of Gwalior Fort, **Madhya Pradesh**.
 - They depict Tirthankaras in seated **Padmasana posture** and **Kayotsarga posture** in typical naked form.

- **Vasantgarh hoard:** it is located in **Rajasthan**; **evidence** shows a strong foothold of Jainism in this area as 240 Jain bronze idols were discovered.
 - Idols of this hoard show images of Tirthankara, **sashandevatas** (yaksha and yakshi) and Jain deities in Shwetambar iconography.

30.What are Off-Budget Liabilities?

The Indian government ended its practice of off-budget borrowings in FY2022 to increase fiscal transparency. And it is planning to pre-pay the remaining such Off-Budget liabilities.

- The **Comptroller and Auditor General (CAG) of India** and the **15th Finance Commission** had red-flagged the off-Budget funding of welfare schemes through public sector entities and had urged the Centre to come clean on these.

Off-Budget Liabilities

- Off-Budget liabilities refer to debts taken by state-run agencies to finance government programs and subsidies outside the traditional budget.
- These agencies raise funds through bonds that offer higher interest rates than **government securities (G-secs)**.
- But since the liability of the loan is not formally on the Centre, the **loan is not included in the national fiscal deficit**. This helps keep the country's fiscal deficit within acceptable limits.
- By end-FY21, the Centre had off-budget liabilities close to Rs 6.7 trillion.
- The outstanding off-budget liabilities of the Centre include about **Rs 49,000 crore for the Pradhan Mantri Awas Yojana-Rural**, Rs 20,164 crore for various irrigation projects, Rs 12,300 crore for **Swachh Bharat Mission Grameen**,

Government's Efforts to Eliminate Off-Budget Liabilities

▪ **Efforts:**

- The Indian government took a significant step towards fiscal transparency by **ending its practice of off-budget borrowings** through state-run agencies in the FY22 budget.
- The government also took over Rs 5 trillion or 75% of its off-Budget liabilities from the **National Small Saving Fund (NSSF)** in FY21-FY22.
- However, the remaining off-Budget liabilities of Rs 1.7 trillion are proving challenging to eliminate due to **bondholders' reluctance to forego high-yield bonds.**

Challenges:

- Bondholders are **unwilling to give up their high-yield bonds and lose interest income for the remaining period of the bonds.**
 - The investors are worried that they won't find other secure and highly rated bonds with similar attractive coupon rates to invest in if they accept the prepayment offer.
- Furthermore, **bondholders usually demand a premium or a higher interest rate than promised to them to recoup their loss of interest income** in the residual period of the bonds, in case an issuer wants to prepay.

▪ **Implications of Off-Budget Liabilities:**

- Pushing the government's debt-to-GDP to a 15-year high of about 61.6% in FY21.
- Hindering the government's efforts to achieve financial transparency and accountability.
- Diverting funds from priority sectors such as health, education, and infrastructure development to finance other government programs and subsidies.

- Contributing to the accumulation of non-performing assets in state-run agencies.

MAINS 900+

BATCH 2 FROM JULY, 10

RAJA SIR'S
CRACKING IAS ACADEMY
Since 2005 - Feel the pulse of UPSC

MAINS 2024 SPECIAL

Writing effective answers is the ultimate Core Competency.

TOTAL - 15 TESTS + ETHICS CLASSES (GENERAL STUDIES+ESSAY+PSIR/SOCIOLOGY)

FEATURES

- * Flexible & Customisable Tests
- * 1-2-1 Discussion
- * Model Answers
- * Micro and Macro Analysis of Answer Scripts
- * Value Addition - Current Affairs

PAST RECORDS

- * Helped Many Score 285+ IN PSIR
- * Helped Many Score 120+ IN ETHICS
- * Helped Many Score 140+ IN ESSAY
- * Helped Many Score 285+ IN SOCIOLOGY
- * Achieved Ranks - AIR - 18, 37, 78, 104, 143

DELIVERED

- * 70% Qns in General Studies
- * 95% Qns in PSIR & SOCIOLOGY
- * Similar Topics in Essay

Proof - Education is what remains after one has forgotten what one has learned in school.
(MAINS 2023)

Education sans values.

(Our Essay Test Question)

19 YEARS
OF ETHICAL
IAS COACHING

CLASSROOM (CHENNAI) | ONLINE | DISTANCE

PLAN A

GS 1 + GS 2 + GS 3 + GS 4 + ESSAY

- * 4 Full Length Tests + 2 Ethics Tests
- * Ethics Enhancing Test - Discussion
- * 3 Essay Tests + Expected Essays Booklet
- * Ethics Solved Papers - 2014-2023

PLAN B

POLITICAL SCIENCE & IR

GS 1 + GS 2 + GS 3 + GS 4 + ESSAY

- * PLAN A +
- * 6 Tests for PSIR
- * PSIR Solved Papers - 2014-2023

PLAN C

SOCIOLOGY

GS 1 + GS 2 + GS 3 + GS 4 + ESSAY

- * PLAN A +
- * 6 Tests for Sociology
- * Sociology Solved Papers - 2014-2023



9884554654

DANCING TO THE UPSC TUNES

70+ QUESTIONS
DELIVERED
SINCE 2005



ONLINE | OFFLINE
9884554654

RAJA SIR'S
CRACKING IAS ACADEMY
Since 2005 - Feel the pulse of UPSC

SIGN UP NOW

TO CLEAR PRELIMS 2025

PRE-DRILL 2025

Evaluate

Enhance Your Performance

FEATURES

- * Hidden Remote Qns Covered
- * Question source revealed
- * Source link provided
- * Current Affairs Centric Qns
- * Post Test Discussion
- * Explanation file in PDF

**ANY SERIOUS IAS ASPIRANT
CAN UNDERSTAND OUR DESIGN.**

30 TESTS

SECTION WISE (GS) TEST - 25
FULL MOCK TEST (GS) - 05

19 YEARS
OF ETHICAL
IAS COACHING

CrackingIAS.com
IASgoogle.com
CrackingIASbooks.com