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1. Cash Reserve Ratio (CRR) and Statutory Liquidity Ratio (SLR)

- A crucial sector of any economy is its banking sector. It often serves as a mirror to the overall economy, with banking activity enabling investment decisions. Along with repo rate, reverse repo rate, etc., Cash Reserve Ratio (CRR) and Statutory Liquidity Ratio (SLR) are crucial components of banking operations. The two ratios help determine the liquidity in the banking system and indicate national inflation and growth fluctuations.

Parameter	CRR (Cash Reserve Ratio)	SLR (Statutory Liquidity Ratio)
Definition	Percentage of total deposits that banks must maintain as cash.	Percentage of total deposits that banks must maintain in the form of gold, cash, or approved securities.
Purpose	CRR is used by the RBI to control the flow of money in the economy. It regulates the amount of funds that banks can lend.	SLR is used to ensure that banks have sufficient funds to meet the demands of their customers. It ensures the solvency of banks and encourages them to invest in government securities.
Impact on Interest Rate	Increased CRR leads to a decrease in the amount of money available for lending, thus, leading to an	Increased SLR reduces the funds available for lending, thus, leading to an increase in interest rates.

	increase in interest rates.	
Penalty for Non-compliance	Banks failing to maintain the required CRR have to pay a penalty to the RBI.	Banks failing to maintain the required SLR have to pay a penalty to the RBI.
Form of Reserve	CRR is maintained as cash.	SLR is maintained as cash, gold, or approved securities.

Cash Reserve Ratio (CRR)

- Cash Reserve Ratio (CRR) refers to the percentage of a commercial bank's total deposit that it must maintain in the form of cash with the central bank. CRR in India is set by the Reserve Bank of India (RBI) under the powers conferred to it by the RBI Act of 1934. It is a crucial tool used by the RBI to regulate the percentage of money circulating in the economy. When the CRR is high, banks have less money to lend, which can help control inflation. Conversely, a lower CRR means banks have more money to lend, which can stimulate economic growth.

Advantages of CRR

- By adjusting the CRR, the RBI can control the amount of money that banks have available to lend, which can help control inflation.
- It ensures that banks have a certain amount of cash in hand, promoting financial stability and reducing the risk of bank failure.
- CRR is a powerful tool for regulating the supply of money in the economy, which can influence interest rates and economic growth.
- Disadvantages of CRR

- A high CRR can limit the amount of money available to the banks for lending purposes, which can, in turn, slow down economic growth.
- Money that is held as part of the CRR does not earn interest, which can reduce bank profits.
- If the CRR is too high, it can cause liquidity problems for banks, especially during times of financial stress.
- Rules for Setting CRR in India
- The RBI reviews the CRR as part of its monetary policy review, which typically occurs bi-monthly. Regulation of CRR acts as a tool to increase and decrease money supply in the economy. The RBI uses the CRR as a tool to control the liquidity in the Indian economy. Here are the key rules for setting the CRR in India:
 - The RBI may set CRR between 3% and 15% of a bank's Net Demand and Time Liabilities (NDTL). However, currently, there is no specified lower or upper limit for the CRR.
 - It is maintained in cash and cash equivalents and must be stored in the bank's vault or held as balances with the RBI.
 - The CRR is required to be calculated based on the bank's NDTL as of the last Friday of the second preceding fortnight. The required reserves are average daily balances that a bank must maintain over a two-week period.
 - Banks cannot earn any interest on the funds held as part of the CRR.
 - In case, the bank fails to maintain the required CRR, the RBI can impose a penalty.

Statutory Liquidity Ratio (SLR)

- The Statutory Liquidity Ratio regulates the flow of money in the economy. It is the percentage of a bank's net time and demand liabilities that must be maintained as cash, gold, and approved securities. The primary purpose of the

SLR is to ensure that banks have enough funds to meet their obligations to their customers. **As of 2024, the current SLR is 18.00%.**

- The SLR indirectly affects the lending capacity of the banks. A higher SLR means banks have less money available for commercial lending. A low Statutory Liquidity Ratio indicates that banks have more funds available for public lending or investment in other profitable avenues. In case many depositors demand back their money at the same time, the bank might struggle to meet these demands due to the lower level of liquid assets.
- Rules for Setting SLR in India
- The rules for setting the Statutory Liquidity Ratio (SLR) in India are governed by the Reserve Bank of India (RBI). The RBI, under Section 24 of the Banking Regulation Act, 1949, has the authority to set the SLR rate. Here are the key rules:
 - The RBI determines the SLR rate, and it is reviewed periodically. This can be changed as per the economic conditions and the objectives of the monetary policy.
 - As per the Banking Regulation Act, every bank in India is required to maintain the minimum proportion of Net Demand and Time Liabilities (NDTL) as liquid assets, such as cash and gold, at the close of business every day.
 - Liquid assets may be available as cash, gold, or approved securities. The value of such assets is calculated as a percentage of the total demand and time liabilities.
 - If a bank fails to maintain the required SLR, it is liable to pay a penalty to the RBI. The penalty can be imposed as a higher interest rate on the shortfall amount or a monetary fine.
 - Banks are required to report their SLR position to the RBI. This helps the RBI to monitor compliance and take necessary action in case of any shortfall.
- Advantages of SLR
- Banks maintain SLR due to the following advantages:

- The SLR ensures that banks have a certain level of liquid assets that they can use to meet customer withdrawals or other obligations.
- By requiring banks to hold a certain percentage of their liabilities in liquid assets, the SLR promotes financial stability and reduces the risk of bank failure.
- The SLR can be used to control credit growth in the economy. When the SLR is high, banks have less money to lend, which can help control inflation.
- Disadvantages of SLR
- Limits Lending: A high SLR can limit the amount of money that banks have available for the purpose of lending, which can slow economic growth.
- Reduces Bank Profits: Assets that are held as part of the SLR often earn lower returns than other investments, which can reduce bank profits.
- Can Cause Liquidity Problems: If the SLR is too high, it can cause liquidity problems for banks, especially during times of financial stress.

Similarities Between CRR and SLR

- The following points indicate similarities between CRR and SLR:
- CRR and SLR are regulatory measures used by the RBI to manage liquidity in the economy. This ensures the stability and solvency of the banking
- Both ratios directly impact the banking sector as they determine the amount of funds that banks have to keep aside either as cash (CRR) or in the form of liquid assets (SLR).
- CRR and SLR influence the money supply in the economy. A higher CRR or SLR reduces the money banks can lend out, thereby contracting the money supply. Conversely, a lower CRR or SLR increases the money supply by allowing banks to lend more.
- Compliance with both CRR and SLR is mandatory for all scheduled commercial banks in India. Non-compliance can result in penalties imposed by the RBI.

- Banks are not allowed to use either the cash kept aside for CRR or the assets kept aside for SLR to earn interest or profit.
- Both CRR and SLR act as safety measures, ensuring that banks have enough reserves to meet any unexpected large-scale withdrawals by depositors.

2. Office of profit: What & the why?

The concept of "Office of Profit" in India relates to positions held by Members of Parliament or Members of the Legislative Assembly (MPs or MLAs) that may provide financial gain or benefit.

The origin of the term 'Office of Profit' can be found in the English Act of Settlement, 1701. Hence, the concept of 'office of profit' is borrowed from the UK.

- The constitution and Representation of People's Act, 1951 **does not have a clear definition** of what constitutes an office of profit, but the definition has been developed through various court judgments.
- The test for determining whether a person holds an office of profit is based on the test of appointment, as per the Supreme Court's ruling in **Pradyut Bordoloi vs Swapan Roy (2001)**. This test involves evaluating multiple factors, including:
 - whether the government is responsible for appointing the individual,
 - if the government has the authority to terminate the appointment,
 - if the government sets the remuneration for the position,
 - What is the source of the remuneration, and the extent of power or authority associated with the position.

What are the constitutional and legal provisions pertaining to the Office of Profit?

Provision

Description

Article 102(1)

A person will be ineligible to be elected as a **member of the Parliament** if they

Article 103

hold any office of profit under the government of India or any state, except for those offices that have been specifically declared by law to not cause disqualification.

If any question arises as to whether a member of either House of Parliament has become subject to any of the disqualifications mentioned in Article 102, the question shall be referred for the decision of the President and his decision shall be final

Before giving any decision on any such question, the President shall obtain the opinion of the Election Commission and shall act according to such opinion

Article 191(1)

A person will be disqualified if he holds any office of profit under the Government of India or the Government of any State specified in the First Schedule, other than an office declared by the Legislature of the State by law not to disqualify its holder.

The Parliament (Prevention of Disqualification) Act, 1959

The Act has been amended multiple times to expand the list of offices that are **exempt from disqualification**. The certain offices exempted are:

Representation of People Act,
1951(RPA,1951)

State Laws

Minister of union or state
Leader of opposition in the Parliament
Chairman of National Commission on Minorities; for Scheduled Castes; for Scheduled Tribes; for Women, etc.

States that a person **shall be disqualified** from holding office if they have a contract with the government for the supply of goods or the execution of any works undertaken by that government, as stated in Clause 9A, in relation to their trade or business.

Certain state governments have passed laws that **exclude certain offices** from being considered an "office of profit" under the state's jurisdiction

Why is "office of profit" a ground for disqualification?

- The underlying concept behind “office of profit” as a ground for disqualification is the principle of separation of power between the functionaries of a state like the legislative, judiciary, and executive.
- **Upholding the constitutional responsibility:** The essence of disqualification behind holding an office of profit is that legislators who hold such positions may be influenced by the government and **may not fulfill their constitutional responsibilities** of holding the executive accountable to the legislature.
- **Separation of power:** The office of profit law aims to enforce a **basic feature of the Constitution**, which is the ‘**Separation of Power**’ between legislature and executive.

- **Ensuring checks and balances:** Disqualification based on the office of profit ensures the **isolation, immunity, or independence of one branch of government** from the actions or interference of another and ensures checks and balances.
- **Preventing conflict between duties and interests:** The object of enacting Articles 102 and 191 is that there **should not be any conflict between the duties and interests** of an elected member and to see that such an elected member can carry freely and fearlessly his duties without being subjected to any kind of governmental pressure.
- **What are some examples of issues pertaining to the office of profit in India?**
- In 2006, the **Congress party president** was accused of holding an office of profit by being an MP as well as holding the office of the chairperson of the National Advisory Council, the latter being a post with the rank of a Cabinet minister. Later on, the Congress president resigned from the Lok Sabha membership.
- In 2006, SP Rajya Sabha member **Jaya Bachchan** was accused to hold the post of the Chairperson of the Uttar Pradesh Film Development Corporation. Later, She was disqualified by Election Commission for holding the office of profit.
- In 2018, **20 MLAs of the Delhi Legislative Assembly** were appointed parliamentary secretaries and were later disqualified by the President, based on the recommendation of the Election Commission, for holding an "office of profit".
- In 2022, **Jharkhand Chief Minister** was accused of holding an office-of-profit by granting himself a stone chips mining lease. The notice has been issued by the Election Commission for holding office of profit.

What are the various supreme court judgments pertaining to the office of profit?

- Many times in the past, the Supreme Court has interpreted the law related to the office of profit.
- **CVK Rao v. Dentu Bhaskara Rao(1964):** Supreme Court constitution panel ruled that a mining lease does not amount to a contract of supply of goods.

- **Kartar Singh Bhadana vs. Hari Singh Nalwa & others(2001):** A three-judge panel of the Supreme Court made it clear that a mining lease does not amount to the execution of a work undertaken by the government.
- **Jaya Bacchan v. Union of India(2006):** The court held that an office of profit is an office that is capable of yielding a profit or pecuniary gain. The actual 'receipt' of profit is not necessary, the 'potential' to yield the profit is sufficient.
- **UC Raman case (2014):** Constitution allows a legislature to pass a law to grant exemption to any office of profit holder.
- The **Calcutta High Court judgment in 2015** stated that the appointment of legislators as parliamentary secretaries is an attempt to bypass the constitutional limit on the number of ministers, as it confers the rank of a junior minister on the legislator.
- Similarly, in 2009, the **Bombay High Court** also held that appointing parliamentary secretaries of the rank and status of a Cabinet Minister is in violation of Article 164 of the Constitution, which limits the number of ministers in an assembly.

What can be the way forward in dealing with the issues surrounding the Office of Profit in India?

- The following are the major recommendations that can prevent the misuse of the provisions of the office of profit in India:
- **2nd ARC recommendation:** The constitution or the Representation of People's Act, 1951 should be amended to define the office of profit. The 2nd ARC has also recommended that all offices with executive decision-making powers and financial control be treated as an office of profit.
- **The Parliament's Joint Committee on Office of Profit** has suggested additional parameters like remuneration, powers, and patronage to determine the Office of Profit.

- **The National Commission to Review the Working of the Constitution** suggested that the Election Commission should be mandated to determine the offices of profit.

3. What is Coal Gasification?

Coal gasification is the process of converting coal and water into syngas, which contains carbon monoxide (CO), hydrogen (H₂), carbon dioxide (CO₂), methane (CH₄), and water vapour (H₂O). During gasification, coal is cooked under high pressure while being blasted with oxygen and steam. Oxygen and water molecules oxidise the coal and form syngas during the process.

Coal Gasification

- **Coal gasification** is the process of partly oxidising coal with air, oxygen, steam, or carbon dioxide to produce a fuel gas.
- This gas is then utilised to generate electricity instead of piped natural gas, methane, and other fuels.
- In-situ gasification of coal, also known as **Underground Coal Gasification (UCG)**, is the process of turning coal into gas while it is still in the seam and retrieving it through wells.
- Rather of directly burning coal, gasification transforms all of its carbon into electricity, hydrogen, and other kinds of energy via partial oxidation.
- **Syngas production:** It generates Syngas, a mixture predominantly composed of methane (CH₄), carbon monoxide (CO), hydrogen (H₂), carbon dioxide (CO₂), and water vapour (H₂O).
- Syngas may be converted into a variety of fertilisers, fuels, solvents, and synthetic materials.

Coal Gasification - Process

- During gasification, oxygen and steam (water vapour) are forced through the coal while it is still being heated (and, in some circumstances, pressured).
- The term "allothermal" refers to a technique in which the coal is heated by external heat sources, whereas "autothermal" refers to a procedure in which the coal is heated by exothermic chemical processes that occur within the gasifier itself.
- It is crucial that the amount of oxidizer delivered is insufficient to completely oxidise (combust) the fuel.
- During the processes above, the coal is oxidised by oxygen and water molecules, producing a mixture of gases including carbon dioxide (CO_2), carbon monoxide (CO), water vapour (H_2O), and molecular hydrogen (H_2).

By Products of Coal Gasification

- Coke, coal tar, sulphur, and ammonia are all byproducts of syngas production that are helpful.
- Coal gas is used in the production of colours, pharmaceuticals (particularly sulfa drugs), saccharin, and a wide range of chemical compounds.
- Coke is a non-smoking fuel that is also used to manufacture water gas and producer gas.
- Several chemicals are extracted from coal tar via fractional distillation, including
 - Tar is used for road paving.
 - Benzole is a kind of vehicle gasoline.
 - Creosote is a Phenol-based wood preservative used in the production of polymers.

○ Disinfectants and cresols

- Sulphur is used to make sulfuric acid, while ammonia is commonly used to make fertiliser.

Underground Coal Gasification

- **Underground coal gasification (UCG)** is simply an industrialised gasification process that occurs in unmined coal seams.
- It requires injecting a gaseous oxidising agent, often oxygen or air, and transferring the resulting product gas to the surface via production gas wells dug from the ground.
- The gas produced might be used as a chemical feedstock or as an energy source.
- The approach can be used to harvest materials that would otherwise be prohibitively costly.
- It is also a feasible alternative to standard coal mining methods.
- Although UCG has a lesser environmental and social effect than conventional coal mining with gasification, there are environmental concerns, including the danger of aquifer contamination.

Significance of Coal Gasification

- Coking coal is often used in the manufacturing process of steel businesses.
- The majority of coking coal is imported and hence costly.
- Facilities can utilise syngas from coal gasification facilities instead of coking coal to save expenses.
- It is mostly used to generate energy and chemical feedstock.

- The hydrogen produced by coal gasification may be utilised for a variety of applications, including the production of ammonia and the powering of a Hydrogen Economy.
- India's hydrogen consumption is expected to rise from 6.7 million tonnes per year today to 11.7 million tonnes by 2030.
- Now, the major users of hydrogen generated from natural gas are refineries and fertiliser factories. It may be manufactured using coal gasification techniques.

Coal Gasification - Advantages

- Coal gasification can also assist alleviate local environmental issues that have brought portions of the country to a halt in recent months.
- Gasification makes it easier to use coal's chemical qualities.
- It is seen as a greener alternative to coal combustion.
- Coal gas may be transformed into chemical energy, which is then utilised to produce iron from iron ore, as well as methanol and urea.
- **Carbon Capture and Storage:** Another advantage of coal gasification is that it allows you to separate the good from the bad and choose which bits to keep.

Coal Gasification - Disadvantages

- According to some research, coal gasification emits more CO₂ than a typical coal plant.
- It has a higher total carbon intensity, making it unappealing from the standpoint of climate change.
- Coal gasification is one of the more water-intensive modes of energy generation, and the country already faces water scarcity.

Steps taken by the Government in Coal Gasification

- **Revenue share concession of 20%:** To encourage the use of clean fuels, the government has offered a revenue share concession of 20% on coal used for gasification.
- CIL also intends to build at least three gasification facilities (in addition to Dankuni) on a BOO basis through worldwide tendering and has inked an MOU with GAIL for the selling of synthetic natural gas.
- This would aid in harnessing the nation's reserves for maximum utilisation while moving the country towards sustainability in accordance with global norms.
- Technological developments provide better coal recovery, more operational flexibility, increased productivity, increased safety, and cheaper costs.
- **Setting up of National Coal Gasification Mission:** The Ministry of Coal has decided to establish the National Coal Gasification Mission in order to raise awareness among all stakeholders and to develop a workable road map with clear duties.
- The process of partially oxidised coal with air, oxygen, steam, or carbon dioxide to generate a fuel gas is known as coal gasification. Coal gasification can help to relieve local environmental difficulties that have slowed down parts of the country in recent months. Gasification facilitates the utilisation of coal's chemical properties. Coal gas may be converted into chemical energy, which can subsequently be used to manufacture iron from iron ore, methanol, and urea.

4. Electrified Flex Fuel Vehicle

- The Union Minister for Road Transport and Highways during the launch event, highlighted the significance of ethanol as a fuel option. He emphasized that ethanol possesses qualities that are in line with India's priorities – being a domestically produced, environmentally friendly, and sustainable fuel.
- He stated that this initiative **aligns with the objectives of the government, which include achieving energy self-sufficiency, doubling the income of farmers, transitioning them towards becoming energy providers ("urjadata")** while still supporting them as food providers ("annadata") and having a positive impact on the environment.

Electrified Flex Fuel Vehicle

- An Electrified Flex Fuel Vehicle (EFFV) is a **type of vehicle that combines two distinct propulsion systems: a flex fuel engine and an electric powertrain.** This innovative design allows the vehicle to operate using either the traditional flex fuel engine, which can run on a wide range of ethanol-gasoline blends, or the electric powertrain, which includes an electric motor, a battery, and a power controller.

Key components of an EFFV

1. Flex Fuel Engine

- A flex fuel engine is designed to **run on various ethanol-gasoline blends. These blends can range from E0 (pure gasoline) to E100 (pure ethanol),** with different proportions of ethanol and gasoline in between. The engine's control system adjusts its parameters based on the fuel blend used, allowing for optimized combustion and performance.

2. Electric Powertrain

- The electric **powertrain includes an electric motor, a battery pack, and a power control unit.** This electric motor can propel the vehicle independently, providing a zero-emission mode of transportation. The battery stores the

electricity required to power the motor, and the power control unit manages the flow of electricity between the battery and the motor.

3.Switching Modes

- One of the main features of an EFFV is its **ability to seamlessly switch between the flex fuel engine and the electric powertrain**. This switching can be automatic, based on factors like driving conditions, battery charge level, and power demand. For instance, the vehicle might operate in electric-only mode during city driving, reducing emissions and improving fuel efficiency. On highways or when additional power is needed, the flex fuel engine can take over.

Higher Efficiency and Lower Emissions

- The combination of a flex fuel engine and an electric powertrain offers several advantages. **When running on electricity, the vehicle produces zero tailpipe emissions**. Additionally, using ethanol in the flex fuel engine reduces carbon emissions compared to traditional gasoline. This dual-mode operation contributes to overall higher fuel efficiency and lower environmental impact.

Energy Security and Sustainability

- EFFVs address both energy security and sustainability concerns. The ability to run on domestically produced ethanol reduces reliance on imported fossil fuels, enhancing energy security. Ethanol itself is derived from renewable sources, such as sugarcane or corn, making it a more sustainable fuel option.

Technological Innovation

- EFFVs represent a technological advancement in the automotive industry, combining the strengths of both internal combustion engines and electric propulsion systems.

How does an EFFV work?

Fuel Detection and Engine Control

- An EFFV is equipped with a **fuel sensor that continuously monitors the ethanol-gasoline blend present in the fuel tank.** This information is relayed to the vehicle's engine control unit (ECU), which adjusts the engine's parameters accordingly. The flex fuel engine is designed to adapt its ignition timing, fuel injection, and other factors based on the detected ethanol content. This adaptability allows the engine to run smoothly on varying ethanol-gasoline blends without requiring any modifications.

Dual-Mode Operation

1. **Flex Fuel Engine Mode:** In situations where the vehicle requires higher power output or is running at higher speeds, the flex fuel engine takes over. The engine operates similarly to traditional internal combustion engines, utilizing the detected ethanol-gasoline blend as fuel.
2. **Electric Powertrain Mode:** When the vehicle is operating at lower speeds, during city driving, or while coasting, the electric powertrain can take over. The electric motor is powered by the onboard battery, providing instant torque and efficient acceleration. The engine might be completely shut off during this mode, reducing emissions and improving efficiency.

Synergy of Powertrains

- The electric powertrain and the flex fuel engine can work in synergy. During acceleration or when additional power is needed, the electric motor can provide a boost of torque, aiding the engine and enhancing performance. This is particularly useful during hill climbing or quick acceleration scenarios.

Regenerative Braking and Battery Charging

- When the vehicle decelerates or brakes, the electric motor can function as a generator, converting kinetic energy back into electricity. This **process is known as regenerative braking.** The generated electricity is then fed back into the battery, helping to recharge it and extend the vehicle's electric range.

Power Controller and Driver Input

- The power controller, managed by the vehicle's electronic control system, determines when to utilize the flex fuel engine, the electric motor, or a combination of both. The decision is based on factors such as the driver's input (acceleration, braking), vehicle speed, battery charge level, and the overall power demand.

What are the features of an EFFV?

- It can run on 100% ethanol, which is a renewable and cleaner fuel than gasoline.
- It can reduce carbon dioxide emissions by up to 80% compared to a conventional gasoline vehicle.
- It can improve fuel economy by up to 50% compared to a conventional gasoline vehicle.
- It can enhance engine performance by using ethanol's higher octane rating and the electric motor's instant torque.
- It can reduce dependence on imported oil and increase energy security by using locally produced ethanol.
- It can support rural development and farmers' income by creating demand for ethanol crops.

Significance of an EFFV

Climate Goals and Emission Reduction

- EFFVs contribute to India's climate goals by **reducing greenhouse gas emissions from the transportation sector**. The combination of using renewable ethanol and the electric powertrain helps lower carbon dioxide emissions, aligning with global efforts to mitigate climate change.

Air Quality Improvement

- EFFVs play a crucial role in helping India achieve its air quality standards. By reducing tailpipe emissions of particulate matter, nitrogen oxides, carbon

monoxide, and hydrocarbons, these vehicles can significantly improve air quality and public health in urban areas.

Energy Security and Foreign Exchange Savings

- India's dependence on imported oil can be mitigated through the adoption of EFFVs. By using domestically produced ethanol and the electric powertrain, these vehicles reduce the need for imported fossil fuels, thus saving foreign exchange and enhancing energy security.

Economic Growth and Job Creation

- The introduction of EFFVs stimulates the ethanol industry and its associated sectors, leading to job creation and economic growth. This includes jobs in ethanol production, distribution, vehicle manufacturing, and the development of charging infrastructure.

Health and Well-Being Improvement

- One of the significant societal benefits of EFFVs is the reduction of air pollution. By emitting fewer pollutants, such as particulate matter and nitrogen oxides, these vehicles contribute to improved public health and well-being, reducing the incidence of respiratory diseases and related health issues.

Promotion of Renewable Energy

- EFFVs promote the use of renewable energy resources, such as ethanol derived from crops. This aligns with India's objectives of increasing the share of renewable energy in its energy mix and reducing reliance on fossil fuels.

Technological Innovation and Leadership

- The development and adoption of EFFVs showcase India's technological innovation and leadership in the automotive industry. This contributes to the nation's reputation as an innovator in sustainable transportation solutions.

Global Environmental Commitments

- As part of the international community, India has committed to reducing its carbon footprint and enhancing environmental sustainability. EFFVs demonstrate a proactive approach to fulfilling these commitments.

Rural Development and Farmer Income

- EFFVs create demand for ethanol crops, such as sugarcane and corn, thereby supporting rural development and increasing farmers' income. This can have a positive impact on rural economies.

Social Responsibility and Awareness

- The adoption of EFFVs reflects a responsible approach towards protecting the environment and the health of citizens. It also raises awareness about cleaner transportation options.

India has taken several steps to promote EFFVs and ethanol blending:

Mandated Ethanol Blending: The mandate to achieve 20% ethanol blending in gasoline by 2025 indicates the government's commitment to reducing fossil fuel consumption and lowering emissions through the integration of renewable biofuels.

- **Increased Procurement Price and Ethanol Sources:** By increasing the procurement price of ethanol from sugar mills and allowing the production of ethanol from surplus food grains, the government is incentivizing ethanol production, diversifying feedstock sources, and bolstering the overall availability of ethanol for blending.
- **Tax Waivers:** The waiver of taxes and duties on ethanol production and distribution reduces the financial burden on ethanol producers and encourages them to expand their production capacity.
- **Financial Incentives and Subsidies:** Providing financial incentives and subsidies for establishing ethanol plants and installing flex fuel pumps incentivizes private sector participation in the biofuel industry and accelerates the development of necessary infrastructure.
- **Research and Development Support:** Investing in research and development for EFFVs and other biofuel technologies demonstrates the government's commitment to staying at the forefront of innovation in the transportation sector and promoting the adoption of more sustainable fuel options.

What are the challenges faced by EFFVs?

- **Ethanol Availability:** A significant challenge is the limited production of ethanol relative to the 20% blending target. Increasing ethanol production capacity requires investments in feedstock cultivation, processing facilities, and distribution networks. Additionally, policies that encourage the use of various feedstocks and support the growth of the ethanol industry are necessary to meet the demand for blending.
- **Ethanol Quality:** The existing ethanol quality standard may not align with the requirements for high-blend ethanol fuels. Updating the ethanol quality standard to international norms is crucial to ensure the compatibility of higher ethanol blends with EFFVs and conventional vehicles. This requires harmonizing standards and establishing robust quality control mechanisms.
- **Ethanol Infrastructure:** The number of flex-fuel pumps in India is significantly lower compared to conventional fuel pumps. Expanding the infrastructure for ethanol distribution, including flex fuel pumps at retail outlets, is essential to make ethanol fuels readily accessible to consumers across the country.
- **EFFV Cost:** The upfront cost of EFFVs, which includes the electric powertrain and flex-fuel engine components, is often higher than that of conventional gasoline vehicles. This cost differential can discourage consumers from adopting EFFVs. To address these measures such as incentives, tax breaks, and subsidies can help reduce purchase costs and make EFFVs more financially attractive.
- **EFFV Awareness:** Lack of awareness and understanding about EFFVs among consumers and stakeholders is a barrier to their adoption. Educational campaigns, awareness programs, and demonstrations are necessary to inform the public about the benefits of EFFVs, how they operate, and the overall positive impact on the environment and energy security.

Way forward for EFFVs

- **Comprehensive Policy Framework**: Developing a comprehensive policy framework that clearly outlines the objectives, targets, and strategies for EFFVs is crucial. This framework should align with the broader national goals for sustainability, energy security, and emissions reduction. It should also address various aspects such as ethanol production, distribution infrastructure, vehicle technology, consumer incentives, and research and development.
- **Dedicated Coordination Agency**: Establishing a dedicated agency or institution responsible for coordinating and implementing the EFFV program can streamline efforts across different ministries, departments, and stakeholders. This central agency can ensure effective communication, collaboration, and streamlined decision-making to drive the adoption of EFFVs.
- **Supportive Environment**: Creating a conducive and supportive environment for EFFVs involves a combination of regulatory measures, financial incentives, and technical support. This could include tax benefits, subsidies for vehicle purchases, grants for setting up ethanol production facilities and flex-fuel infrastructure, and regulatory reforms that promote ethanol blending and usage.
- **Innovation and Collaboration**: Encouraging innovation and fostering collaboration among various stakeholders, including government agencies, academia, research institutions, and private companies, is essential. This collaborative approach can drive advancements in vehicle technology, ethanol production methods, infrastructure development, and overall efficiency.
- **Monitoring and Evaluation**: Regular monitoring and evaluation are essential to assess the impact of EFFVs on various metrics, such as emissions reduction, fuel consumption, economic benefits, and social acceptance. This data-driven approach enables policymakers to make informed decisions and refine strategies based on real-world outcomes.

Conclusion

- EFFVs are a promising technology that can offer multiple benefits for India's environment, economy, and society. They can also help India achieve its vision of

becoming a global leader in clean energy and mobility. However, they also require a holistic and integrated approach that addresses the technical, economic, social, and institutional aspects of their development and deployment. By doing so, India can realize the full potential of EFFVs and make them a success story for the world to follow.

5. The Hoysalas

- The Hoysala Empire was a Kannadiga power originating from the Indian subcontinent that ruled most of what is now Karnataka between the 10th and the 14th centuries.
- The capital of the Hoysalas was initially located at Belur, but was later moved to Halebidu.
- The Hoysala rulers were originally from Malenadu, an elevated region in the Western Ghats. In the 12th century, taking advantage of the internecine warfare between the Western Chalukya Empire and Kalachuris of Kalyani, the Hoysalas annexed areas of present-day Karnataka and the fertile areas north of the Kaveri delta in present-day Tamil Nadu.
 - By the 13th century, they governed most of Karnataka, north-western Tamil Nadu and parts of western Andhra Pradesh in the Deccan Plateau.
- The Hoysalas claimed to be of the Yadava lineage and had a legendary origin story. According to their inscriptions, their mythical founder, Sala (also known as Poysala), performed a miraculous act of bravery by killing a tiger, hence earning the name “Hoysala,” which means “the one who strikes.”
 - This legend is more symbolic than historical, but it became an important part of the Hoysala identity.
- The early history of the Hoysalas is not well-documented. Still, they gradually gained prominence in the region by serving as vassals to various larger South Indian empires, including the Chalukyas and the Cholas.

- Over time, the Hoysalas asserted their independence and began to establish their kingdom.
- The most significant period of Hoysala rule occurred during the 12th and 13th centuries under notable rulers like Vishnuvardhana, Ballala II, and Veera Ballala III.
 - During this time, they built many impressive temples, showcasing their patronage of art and culture.
 - The Hoysala architectural style, known for its intricate sculptures and finely detailed carvings, reached its zenith during this period.

Prominent Rulers of the Hoysala dynasty

1. Nripa Kama II (963–966 CE): Nripa Kama II is considered one of the early rulers of the Hoysala dynasty. His reign marked the beginning of the Hoysala rule in the region.
2. Vinayaditya (968–1008 CE): Vinayaditya expanded the Hoysala kingdom and consolidated its power. He played a significant role in the dynasty's early development.
3. Ereyanga (1008–1048 CE): Ereyanga, also known as Marasimha I, continued to expand the Hoysala territory. He was an important ruler in the dynasty's history.
4. Veera Ballala I (1048–1098 CE): Veera Ballala I is one of the most renowned Hoysala kings. His reign saw the construction of several famous Hoysala temples, including the Chennakesava Temple at Belur.
5. Vishnuvardhana (1111–1152 CE): Vishnuvardhana is one of the most notable Hoysala kings. He expanded the kingdom and is credited with patronizing the construction of many Hoysala temples, including the Chennakesava Temple at Belur and the Hoysaleswara Temple at Halebidu.
6. Narasimha I (1152–1173 CE): Narasimha I continued the dynasty's patronage of art and architecture. He was known for constructing the Kesava Temple at Somanathapura.

7. Ballala II (1173–1220 CE): Ballala II was another significant Hoysala ruler who continued the dynasty's patronage of art and architecture. He faced conflicts with the Kakatiya dynasty and the Yadavas of Devagiri.
8. Vira Narasimha II (1220–1235 CE): Vira Narasimha II, also known as Narasimha III, succeeded Ballala II. His reign witnessed conflicts with the Chola dynasty and other neighboring powers.
9. Vira Someshwara (1235–1263 CE): Vira Someshwara faced challenges from external invasions during his rule. The dynasty began to decline under his leadership.
10. Narasimha III (1263–1292 CE): Narasimha III was one of the last significant rulers of the Hoysala dynasty. His reign marked a period of decline, with the dynasty gradually losing power.

Administration

- The kingdom was divided into provinces or regions, each administered by local governors or chiefs who were appointed by the king.
 - The kingdom was divided into provinces named Nadu, Vishaya, Kampana, and Desha, listed in descending order of geographical size.
 - Below the provincial level, there were local officials responsible for revenue collection, law enforcement, and administration.
 - Revenue officials, known as Gavundas, were responsible for assessing and collecting taxes from the agricultural sector.
 - Senior ministers, called Pancha Pradhanas, ministers responsible for foreign affairs, designated Sandhivigrahi, and the chief treasurer, Mahabhandari or Hiranyabhandari conducted top-level government affairs.
 - Dandanayakas led the armies while Dharmadhikari served as the chief justice of the Hoysala court.

- Local officials, known as Nyayamurtis or Nyayadhishas, presided over the local courts and helped in the administration of justice.
- The king had the ultimate authority in legal matters and often played a role in the dispensation of justice.

Religion

- The defeat of the Jain Western Ganga Dynasty by the Cholas in early eleventh century and the rising numbers of followers of Vaishnava Hinduism and Virashaivism in the twelfth century mirrored a decreased interest in Jainism. Shravanabelagola and Kambadahalli represent two notable locations of Jain worship in the Hoysala territory.
- The decline of Buddhism in South India began in the eighth century with the spread of Adi Shankara's Advaita philosophy. Dambal and Balligavi constituted only places of Buddhist worship during the Hoysala time.
- Shantala Devi, queen of Vishnuvardhana professed Jainism yet commissioned the Hindu Kappe Chennigaraya temple in Belur, evidence that the royal family tolerated all religions.
- During the rule of the Hoysalas, three important religious developments took place in present day Karnataka inspired by three philosophers, Basavanna, Madhvacharya and Ramanujacharya.
- While scholars debate the origin of Virashaiva faith, they agree that the movement grew through its association with Basavanna in the twelfth century. Some scholars argue that five earlier saints Renuka, Daruka, Ekorama, Panditharadhya and Vishwaradhya founded Virashaivism, a sect that preaches devotion to Lord Shiva.
- Basavanna and other Virashaiva saints preached of a faith without a caste system. In his Vachanas he appealed to the masses in simple Kannada, writing "work is worship" (Kayakave Kailasa).

- Madhvacharya took a critical stance toward the teachings of Shankaracharya, arguing for world as real rather than illusion. Madhvacharya upheld the virtues of Lord Vishnu, propounding the Dvaita philosophy (dualism) while condemning the “mayavada” (illusion) of Shankaracharya. He maintained a distinction between Paramathma (supreme being) and the dependent principle of life.
 - His philosophy gained popularity enabling him to establish eight Mathas (monastery) in Udupi. Ramanujacharya, the head of the Vaishnava monastery in Srirangam, preached the way of devotion (bhakti marga) and wrote Sribhashya, a critique on the Advaita philosophy of Adi Shankara.
- Those religious developments had a profound impact on culture, literature, poetry and architecture in South India. Scholars wrote important works of literature and poetry based on the teachings of those philosophers during the coming centuries.
- The Saluva, Tuluva and Aravidu dynasties of Vijayanagar empire followed Vaishnavism, a Vaishnava temple with an image of Ramanujacharya stands in the Vitthalapura area of Vijayanagara. Scholars in later Mysore Kingdom wrote Vaishnavite works upholding the teachings of Ramanujacharya.
- King Vishnuvardhana built many temples after his conversion from Jainism to Vaishnavism. The later saints of Madhvacharya’s order, Jayatirtha, Vyasatirtha, Sripadaraya, Vadirajatirtha and devotees (dasa) such as Vijaya Dasa, Gopaladasa and others from the Karnataka region spread his teachings far and wide.
 - His teachings inspired later day philosophers like Vallabhacharya in Gujarat and Chaitanya in Bengal. Another wave of devotion (bhakti) in the seventeenth–eighteenth century found inspiration in his teachings.

Society

- Hoysala society in many ways reflected the emerging religious, political and cultural developments of those times.
 - During that period, the society became increasingly sophisticated. The status of women varied.
 - Some royal women became involved in administrative matters as shown in contemporary records describing Queen Umadevi's administration of Halebidu in the absence of Veera Ballala II during his long military campaigns in northern territories.
 - She also fought and defeated some antagonistic feudal rebels.
- That in stark contrast to the literature of the time (like Vikramankadeva Charita of Bilhana) that portrayed women as retiring, overly romantic and unconcerned with affairs of the state.
- Records describe the participation of women in the fine arts, such as Queen Shantala Devi's skill in dance and music, and the twelfth century Vachana poet and Virashaiva mystic Akka Mahadevi's famed devotion to the bhakti movement.
 - She constituted both a pioneer in the era of Women's emancipation and an example of a transcendental world-view.
- Temple dancers (Devadasi), well educated and accomplished in the arts, commonly danced in the temples. Those qualifications gave them more freedom than other urban and rural women restricted to daily mundane tasks. As in most of India, the institute of the Indian caste system prevailed in Hoysala society.
- Trade on the west coast brought many foreigners to India including Arabs, Jews, Persians, Chinese and people from the Malay Peninsula. Migration of people within Southern India as a result of the expansion of the empire produced an influx of new cultures and skills. Royal patronage of education, arts, architecture, religion, and establishment of new forts and military outposts caused the large scale relocation of people.

- In South India, towns called Pattana or Pattanam and the marketplace, Nagara or Nagaram, the marketplace served as the nuclei of a city. Some towns such as Shravanabelagola developed from a religious settlement in the seventh century to an important trading center by the twelfth century with the arrival of rich traders, while towns like Belur attained the atmosphere of a regal city when King Vishnuvardhana built the Chennakesava Temple there. Large temples supported by royal patronage served religious, social, and judiciary purposes, elevating the king to the level of “God on earth.”
- Temple building served a commercial as well as a religious function, open to all Hindu sects.
 - Shaiva merchants of Halebidu financed the construction of the Hoysaleswara temple to compete with the Chennakesava temple built at Belur, elevating Halebidu to an important city as well.
 - Hoysala temples, although secular encouraged pilgrims of all Hindu sects, the Kesava temple at Somanathapura being an exception with strictly Vaishnava sculptural depictions.
 - Temples built by rich landlords in rural areas fulfilled fiscal, political, cultural and religious needs of the agrarian communities. Irrespective of patronage, large temples served as establishments that provided employment to hundreds of people of various guilds and professions sustaining local communities as Hindu temples began to take on the shape of wealthy Buddhist monasteries.

Literature

- Although Sanskrit literature remained popular during the Hoysala rule, royal patronage of local Kannada scholars increased. In the twelfth century, some scholars wrote works in the Champu mixed prose-verse style but distinctive Kannada metres became more widely accepted. The Sangatya metre used in compositions, Shatpadi, Tripadi metres in verses (seven and three

line) and Ragale (lyrical poems) became fashionable. Jain works continued to extol the virtues of Tirthankaras (Jain ascetics).

- The Hoysala court supported scholars such as Janna, Rudrabhatta, Harihara and his nephew Raghavanka, whose works endure as masterpieces in Kannada. In 1209, the Jain scholar Janna wrote Yashodharacharite, the story of a king who intends to perform a ritual sacrifice of two young boys to a local deity, Mariamma. Taking pity on the boys, the king releases them and gives up the practice of human sacrifice. In honor of that work, Janna received the title “Emperor among poets” (Kavichakravarthi) from King Veera Ballala II.
- Rudrabhatta, a Smartha Brahmin (believer of monistic philosophy), represents the earliest well known Brahminical writer. Chandramouli, a minister of King Veera Ballala II, became his patron. Based on the earlier work of Vishnu Purana, he wrote Jagannatha Vijaya in the Champu style relating the life of Lord Krishna leading up to his fight with the demon Banasura.
- Harihara, (also known as Harisvara) a Virashaiva writer and the patron of King Narasimha I, wrote the Girijakalyana in the old Jain Champu style describing the marriage of Lord Shiva and Parvati in ten sections. One of the earliest Virashaiva writers independent from the Vachana literary tradition. He came from a family of accountants (Karanikas) from Halebidu and spent many years in Hampi writing more than one hundred Ragales (poems in blank verse) in praise of Lord Virupaksha (a form of Lord Shiva). Raghavanka had been the first to introduce the Shatpadi metre into Kannada literature in his Harishchandra kavya, considered a classic even though it occasionally violates strict rules of Kannada grammar.
- In Sanskrit, the philosopher Madhvacharya wrote Rigbhshya on Brahmasutras (a logical explanation of Hindu scriptures, the Vedas) as well as many polemical works rebutting the doctrines of other schools of Vedas. He relied more on the Puranic

literature than the Vedas for logical proof of his philosophy.

Vidyatirtha's Rudraprshnabhashya represents another famous writing.

Architecture

- Hoysalas combined Vesara and Dravida style and developed new Hoysala style.
- The temples are characterized by their star-shaped or stellate (star-like) design and highly detailed sculptures, depicting various deities, mythological scenes, and intricate floral motifs.
- The Hoysalas primarily used soapstone (chloritic schist) as their primary building material. This soft stone allowed for intricate carving and detailing.
- Important features of this style are
 - Shrines:
 - The Hoysala temples generally bears one or more shrines. The temples are classified as
 - ekakuta (one shrine),
 - dvikuta (two shrines),
 - Trikuta (3 garbhagrihas) etc.
 - The shrine of the Hoysala temples are generally seen in stellate shaped though sometimes staggered square plan is visible.
 - Garbha griha:
 - A cuboid cell, the garbha griha (sanctum sanctorum) houses a centrally placed murti (enshrined icon) on a pitha (pedestal).
 - Shikhara:
 - The shikhara (superstructure), rises over the garbha griha and together with the sanctum they form the vimana (or mulaprasada) of a temple.
 - They are not very high.

- Some represents hybrid of Nagara and Dravida style and some pyramidal.
- Amalaka:
 - A ribbed stone, amalaka, is placed atop the shikhara with a kalash at its finial.
- Antarala:
 - An intermediate antarala (vestibule) joins the garbha griha to an expansive pillared mandapa (porch) in front, chiefly facing east (or north).
- Mandap:
 - Hoysala temples have features of both open (outer mantapa) and closed mantapa (inner mantapa).
 - The ceilings of the mantapa are highly ornate bearing mythological figures and floral design
- Pillars:
 - The mantapas of Hoysala temples have circular pillars. Each pillar bear four brackets in the top with sculpted figures.
- Gopuram:
 - The temple may be approached via entrances with gigantic gopurams (ornate entrance towers) towering over each doorway.
- Minor shrines:
 - In the prakaram (temple courtyard) several minor shrines and outbuildings often abound.
- Vimanas:
 - The vimanas are either stellate, semi-stellate or orthogonal in plan.
 - Vimana in Hoysala temples are plain inside while outside is profusely elaborated.

- Unique feature is horizontality which is visible in lines mouldings etc.
- Large scale use of moulding is a unique feature which are visible in walls and pillars.
 - Base of pillars and the capital of pillars both are characterised by beautiful mouldings.
- Most of their temples in Bhumija style.
 - In this style miniature shikara is carved on the outerwall of the temple.
- The intricately carved banded plinths, a distinguishing characteristic of the Hoysala temples, comprise a series of horizontal courses that run as rectangular strips with narrow recesses between them.
- The temples themselves are sometimes built on a raised platform or jagati (which is used for the purpose of pradakshinapatha (circumambulation)) leaving a broad flat surface all around the temple.
- These are noted for their extremely fine, delicate, and detailed carvings executed on smooth chlorite schist on walls and ceilings.
- An abundance of figure sculpture covers almost all the Hoysala temples.
- Examples of Hoysala temples are.
 - Channakeshava temple at Beluru
 - Hoysaleswara temple at Halebidu
 - Keshava temple Somnathpura
- They constructed Jain Basadis also.
 - Eg. Savathi Gandhavarana Basadi at Shravanabelagola.

Sculpture

- Hoysala artists have won fame for their sculptural detail, whether in the depiction of the Hindu epics, Yali (mythical creature), deities, Kirthimukha (Gargoyle), eroticism or aspects of daily life.
- Their medium, the soft soapstone, enabled a virtuoso carving style.

- Their workmanship shows an attention paid to precise detail. Every aspect down to a fingernail or toenail has been created perfectly.
- Kirthimukhas (demon faces) adorn the towers of vimana in some temples.
- Sometimes the artists left behind their signature on the sculpture they created.
- The sthamba buttalikas refer to pillar images that show traces of Chola art in the Chalukyan touches.
 - Some of the artists working for the Hoysalas may have been from Chola country, a result of the expansion of the empire into Tamil speaking regions of Southern India.
 - The image of mohini on one of the pillars in the mantapa (closed hall) of the Chennakeshava temple represents a fine example of Chola art.
- Wall panels present general life themes such as the act of reining horses, the type of stirrup used, the depiction of dancers, musicians, instrumentalists, rows of animals such as lions and elephants.
- The Hoysaleshwara temple at Halebidu presents perhaps the best depiction the epics Ramayana and Mahabharata in temple art.
- The Hoysala artist handled erotica with discretion.
 - They avoided exhibitionism, carving erotic themes into recesses and niches, generally miniature in form making them inconspicuous.
 - Those erotic representations associate with the Shakta practice.
- The temple doorway displays heavily engraved ornamentation called Makaratorana (makara or imaginary beast) and each side of the doorway exhibits sculptured Salabanjika (maidens).
- Apart from those sculptures, entire sequences from the Hindu epics (commonly the Ramayana and the Mahabharata) have been sculptured in a clockwise direction starting at the main entrance.
- Depictions from mythology commonly appear such as
 - the epic hero Arjuna shooting fish,

- the elephant-headed God Ganesha,
- the Sun God Surya,
- the weather and war god Indra, and
- Brahma with Sarasvati.
- Also Durga frequently appear in the temples, with several arms holding weapons, in the act of killing a water buffalo (a demon in a buffalo's form) and Harihara (a fusion Shiva and Vishnu) holding a conch, wheel and trident.

Decline of the Hoysala dynasty

- The Hoysala dynasty faced external threats from the Delhi Sultanate and internal strife among the nobility during the late 13th century.
- By the early 14th century, the Hoysala kingdom had weakened, and it was eventually absorbed by the Vijayanagara Empire in the early 14th century.
- The Hoysala dynasty's architectural and artistic legacy continues to be celebrated in Karnataka and beyond. Their temples are popular tourist attractions and are recognized as UNESCO World Heritage Sites.
- The dynasty's contributions to South Indian culture and temple architecture remain highly regarded in the fields of art and history.
- The Hoysala dynasty left an indelible mark on the cultural and architectural heritage of South India. Their temples, characterized by their exquisite craftsmanship, continue to be admired by art connoisseurs and visitors to the region.

6. Monetary Aggregates

- **Monetary aggregate:** A formal accounting method for money, including cash or money market funds.
- **Money supply:** Measured using monetary aggregates in a country.

- **Monetary base:** Comprises the total supply of money in circulation and the central bank's reserved portion of commercial bank reserves.
- **Federal Reserve:** Utilizes money aggregates as a statistical measure to assess the impact of open-market activities on the economy.
- **Money aggregates:** Broad categories for quantifying an economy's money supply.
 1. M0 (monetary base)
 2. M1 (narrow money)
 3. M2
 4. M3 (broad money).

Reserve Money (M0)

- Reserve Money: Also known as "**High Powered Money**" or "**Base Money**".
- Total liability of the RBI.
- Category of cash supply encompassing **physical cash (coins and notes), demand deposits, and other liquid assets held by the central bank.**
- **M0 formula:** Includes currency in circulation, bankers' deposits with the RBI, and 'other' deposits with the RBI.
- **Currency in circulation:** Comprises notes and coins in circulation.
- **Bankers' deposit with the RBI:** Refers to bank's current account deposit with RBI.
- **Other deposits:** Encompasses balances in the accounts of foreign central banks, government, and international agencies like the IMF.

Narrow Money (M1)

- **Narrow money aggregates:** Focus on the most liquid assets primarily used for spending, such as money and checkable deposits.
- **Components of M1:** Consist of currency with the public, demand deposits with banking organizations, and 'other' deposits with the RBI.

- **Demand deposits with the Banking System:** Comprise current deposits and the demand liabilities portion of savings deposits.

M2: An extension of narrow money, includes savings deposits from post office savings accounts, in addition to the components of M1.

- **Components of M2:** Incorporates time liabilities of savings deposits with the Banking System, certificates of deposit issued by banks, and term deposits with a legally binding maturity of up to and including 1 year with the Banking System (excluding CDs).

Broad Money (M3)

- **Broad money:** Represents the aggregate of various components including currency with the public, current deposits, savings deposits, certificates of deposits, term deposits, borrowings from non-depository financial institutions by the banking system, and other deposits with RBI.
- **M3:** Focuses on the balance sheet of the banking sector.
- **Components of M3:** Includes M2, term deposits with a maturity exceeding one year with the Banking System, and call/term borrowings from non-depository financial institutions by the Banking System.

Liquidity and Ranking in Monetary

Name	Type	Liquidity
M0	Narrow Money	Highly Liquid
M1	Narrow Money	Less than M1
M2	Broad Money	Less than M2
M3	Broad Money	Lowest Liquidity

Impact of Monetary Aggregates

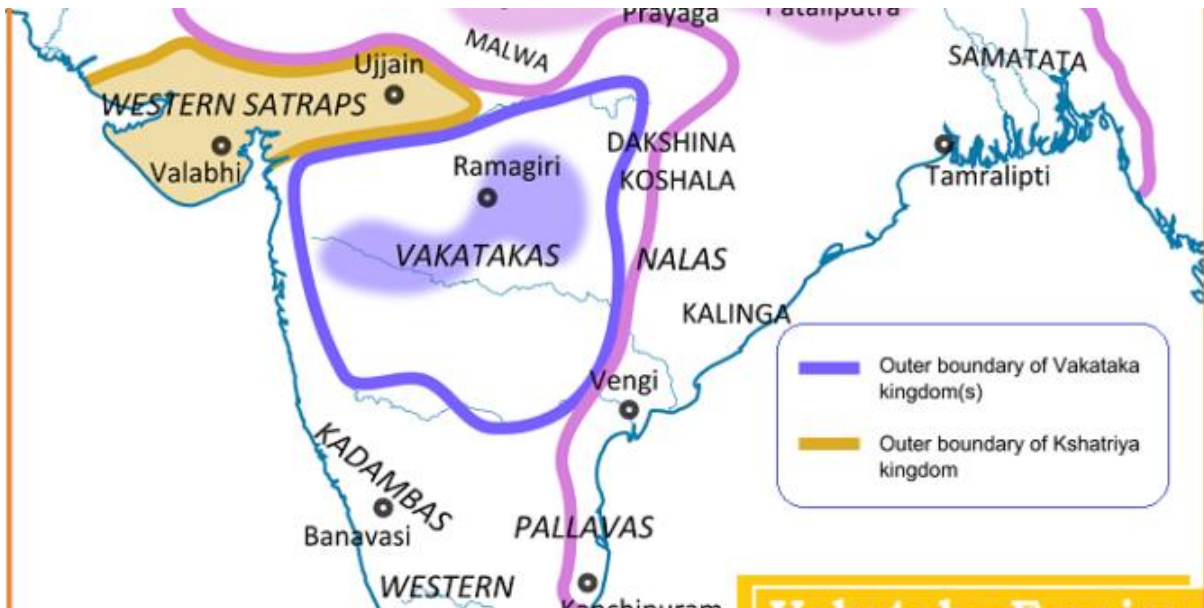
- **Monetary aggregates analysis:** Offers valuable insights into a country's financial stability and general health.
- **Example:** Rapid growth in monetary aggregates may trigger concerns regarding high inflation rates.
- **Impact of excess money:** Prices are likely to increase if there's an excess of money in circulation relative to the quantity of products.
- **Response to high inflation:** Central banks may need to raise interest rates or curtail money supply expansion to address high inflationary pressures.
- **Effects of Monetary Aggregates**
- **Monetary aggregates data:** Utilized for analyzing a country's economic health and financial stability.
- **Central banks:** Rely on these data to formulate monetary policy over decades.
- **Economists' observations:** Highlight a discrepancy between money supply fluctuations and indicators like unemployment, GDP, and inflation.
- **Federal Reserve's role:** Its monetary policy is influenced by the central bank's policy and decisions.
- Monetary aggregates Play a crucial role in understanding a country's economy and shaping central banking policy. Observations over decades Have revealed a weakening connection between money supply changes and key indicators such as inflation, Gross Domestic Product (GDP), and unemployment.

7. Vakataka Dynasty

- The Vakataka dynasty ruled parts of South-Central India (Deccan) from 250 AD to 500 AD. They were the most important successors of the Satavahanas in the Deccan and contemporaneous with the Guptas in northern India. The

Puranas refer to the dynasty as the Vindhyakas. The Vakatakas, who were Brahmin themselves were great champions of the Brahmanical religion and performed numerous Vedic sacrifices.

- Their state is believed to have extended from the southern edges of **Malwa** and Gujarat in the north to the **Tungabhadra** River in the south as well as from the Arabian Sea in the west to the edges of **Chhattisgarh** in the east.



Vindhyashakti (250 – 270 AD):

- Founder of the dynasty. Nothing much is known about him except information from an **Ajanta cave inscription** stating that he is the banner of the Vakataka family and that he is a Dvija (Brahmin).
- He is credited to have performed a number of Vedic sacrifices and thus revived Brahminical rituals, which were in abeyance during the rule of the later Satavahanas.

Pravarasena I (270 – 330 AD):

- Son and successor of Vindhyashakti, who is considered the founder of the real power and greatness of the Vakatakas.
- By military exploits and matrimonial alliances, he extended his kingdom from Bundelkhand in the north to Hyderabad in the south, and to commemorate his victories, he performed an Ashvamedha sacrifice and a vajapeya sacrifice. His son Gautamiputra married the daughter of the **Naga king Bhavanaga**, which cemented an important political alliance.
- He was the only Vakataka king who took the title of samrat, while all other kings took the modest title of maharaja.
- After his death, by 340 AD, there were two divisions of the Vakatakas.
 - Nandivardhana Branch
 - Vatsagulma Branch

Nandivardhana Branch

Rudrasena I (350- 365AD):

- Gautamiputra died during the lifetime of his father and hence, his son Rudrasena I succeeded his grandfather Pravarsena to the throne and ruled from Nandivardhana, near modern Nagpur.
- He is known to have been a worshipper of Lord **Mahabhairava**, the fierce form of Shiva.

Prithvisena I (365- 390 AD):

- Described as a righteous conqueror, he was compared to the epic hero Yudhishtira due to his comparable qualities of truthfulness, transparency, compassion, and humility.

- Padmapura seems to have been an important administrative centre during his time.
- Spent most his time in consolidating his kingdom. The chief feature of his reign is a **political alliance** between Chandragupta II and himself, and together they defeated the **Shaka satraps** of Malwa and Kathiawar.
- During the later parts of his reign, the Guptas and the Vakatakas entered into a matrimonial alliance since **Prithvisena's son Rudrasena II** was married to **Prabhavatigupta**, the daughter of Chandragupta II.

Rudrasena II (390- 395 AD):

- Ruled only for a period of five years as he died prematurely, wife Prabhavatigupta ruled as the regent until 410 AD.

Pravarasena II (395- 440 AD):

- One of the three sons of Rudrasena II. Largest number of Vakataka inscriptions belongs to his reign.
- He is credited with the founding of a new capital at Pravarapura, identified as **Paunar** in Wardha district.
- He entered into a matrimonial alliance with the contemporary **Kadambas** (near Mysore). His son Narendrasena was married to a princess of Kuntala, **Ajihata Bhattarika**, the daughter of **Kakutsavarman** of the Kadamba dynasty.

Narendrasena (440- 460 AD):

- After the death of Pravarasena II, a struggle for succession took place in which Narendrasena emerged successful.
- He had to face the invasion of the **Nala king (Bastar)**, **Bhavdatta Varman** and had to face the stiff opposition of the Nalas all along.

Prithvisena II (460- 480 AD):

- Last known ruler of Nandivardhana branch of the Vakataka dynasty, who is credited with the revival the fallen fortunes of the Vakatakas.
- He had to face the invasion of **Harisena of Vatsagulmaline**, and the invasion of Bhavdatta Varman of the Nala dynasty.
- Defeated son of Bhavdatta Varman, **Arthpati Batthatak** and destroyed **Pushkari** (modern Bhopalapatnam).
- After Prithivisena II's death, it is presumed that Harisena of the Vatsagulma line of the Vakatakas conquered his successors and united the Nandivardhana line with his own.

Vatsagulma Branch

Sarvasena (330- 355 AD):

- The founder of the Vatsagulma line was Sarvasena, the son of Pravarasena I with its capital at **Vatsagulma**(modern **Washim** in Akola district, Maharashtra).
- Was believed to be a renowned Prakrit poet, and his lost work, the **Harivijaya**, was lauded by later writers. Some of his verses were incorporated into the **Gathasattasai**(which was compiled by Satavahana King Hala).
- **Vindhyasena (355- 400 AD):**
- Also known as Vindhyashakti II, ruled for almost four decades and his kingdom seems to have included the **Marathwada** region comprising of the southern part of Vidarbha, the northern part of Hyderabad state, and some other adjoining territories.
- He is believed to have defeated the Kadambas of Banavasi, who ruled over **Kuntala** (north Karnataka).
- His son and successor Pravarasena II appears to have ruled for a period of fifteen years. Pravarasena II was followed by Devasena, who was a pleasure-seeking ruler, but luckily had the services of a very capable minister, **Hasthibhoja**.

Harisena (475- 500 AD):

- Last known king of the Vatsagulma line, who not only united the two Vakataka branches but also extended his territories by conquering Kuntala, Avanti, Kalinga, Kosala, Konkan, and Andhra.
- Dandin, a poet described Harisena as “powerful, truthful and bountiful, glorious, lofty, and a penetrating critic of ethical and economic compendia”.
- The **Thalner copper plates**(which record the gifts of villages of bronze workers and goldsmiths) belong to his reign and many of the **Ajanta caves** were executed during his reign.
- With the death of Harisena II, the glory of the Vakatakas ended and the Nalas, the Kadambas, the Kalachuris, and Yasodharman of Malwa occupied their territory.

Vakataka Polity

- In the case of the Vakatakas, less information is available about their administrative structure. However, it was very similar to the Guptas. Their empire was also divided into provinces called **rashtras or rajyas**, which were administered by governors known as **rajyadhikritas**.
- The provinces were further divided into vishayas, which were again divided into **aharas** and **bhogas/bhuktis**. An officer called **sarvadhyaaksha** presumably appointed and directed subordinate officers known as **Gramakuta** was the head of village administration.
- **Kalidasa** described Vidarbha as **saurya-ramya** (attractive through good government) paying a tribute to the excellent administration of the Vakatakas.
 - **Ajanta cave inscription** states explicitly, the ministers of the Vakatakas, by their good government, became always dear and accessible to the people.

- **Chhatras** denoted irregular troops while **batas** referred to regular troops who were not only responsible for maintaining law and order but also extracted revenue due to the state.

Vakataka Economy

- The main sources of revenue were land revenue and direct taxes. Vakataka inscriptions mention of **klipta** (fixed assessment- land tax) which also found mention in Kautilya's Arthshastra. The **upaklipta** (minor tax) was other minor taxes.
- The villagers had to provide all amenities to touring royal officers, such as grass for feeding their horses or bullocks, hides for their seats and charcoal for their cooking.
- The **agarhara** villages were exempted from all these taxes and obligations.
- Like Guptas, there is frequent mention of artisans, merchants, and guilds in different inscriptions and seals of Vakatakas, which point towards thriving urban crafts and trade. There is also mention of the flourishing conditions and philanthropic activities of guilds.
- For instance, **the Indore plates** of the Vakataka king Pravarasena mention of a **vanijaka** (merchant) named **Chandra** who bought half of the village that was gifted by the king to the brahmanas.

Vakataka Society and Religion

- Hindu society was then no doubt divided into castes, but the caste system had not become quite rigid. Some of the royal families of that age belonged to the Brahmana, and some to the Kshatriya caste.

- The Brahmana prince Rudrasena II married the Vaishya princess Prabhavatigupta. This marriage brought no inferior status to her and her children.
- Another inter-caste marriage of that age is mentioned in the **Ghatotkacha Caveinscription Soma**, a learned Brahmana of Vallura, married women of both the Brahmana and Kshatriya castes.
- **The Indore plates** of the Vakataka king Pravarasena mention of a **vanijaka** (merchant) named **Chandra** who bought half of the village that was gifted by the king to the brahmanas.
- Most of the Vakataka princes were devotees of Siva (**Paramamahesvaras**). However, Rudrasena II, the grandson of Rudrasena I, became a devotee of **Chakrapani (Vishnu)** probably through the Influence of his queen Prabhavatigupta.
- Buddhism also was flourishing in the kingdom of the Vakatakas. Varahadeva, minister of the Vakataka king Hansena, caused a magnificent vihara cave to be excavated at Ajanta in memory of his father and mother. He presented the magnificent cave to the Buddhist Monks at Ajanta.

Vakataka Art and Architecture

- The Vakatakas are noted for having been patrons of the arts, architecture and literature.
- They led public works and their monuments are a visible legacy.
- The rock-cut Buddhist viharas and chaityas of **Ajanta Caves** were built under the patronage of Vakataka emperor, **Harisena**.
- Pravreshvara Shiva temple was built by Pravarasena II at **Mansar** (near Nagpur.)

8. Kakatiya Architecture

- Between the 12th and the 14th centuries, the Kakatiya dynasty dominated the majority of the eastern Deccan region.
- During the Kakatiya dynasty's reign in 1163–1323 CE, a famous Vesara temple architectural style known as Kakatiya architecture was created.
- The majority of Kakatiya architecture is influenced by Chalukya architecture, a synthesis of Nagara and Dravidian forms.

Kakatiya architecture's main characteristics are:

- The unusual architecture, engineering, and ornamentation of the Kakatiyan temple complexes are evidence of the influence of the Kakatiyan sculptor.
- The Kakatiya Temples are notable for and evolved from the later-Chalukyan style of temple building and decorating known as Trikutaalyas, as well as the sculptural art and adornment particular to the time and the Kakatiyan Empire.
- The Kakatiya temples, which are largely dedicated to Siva, exhibit a harmonic synthesis of North Indian and South Indian architectural traditions in their construction, which affected the political atmosphere of the Deccan.
- **Is this a combination of south Indian and north Indian styles?**
- They inherited the Dravida style from the south as well as the Nagara Bhumija style from the north.
- The most important of these temples are the Ramappa temple in Palampet, the Thousand Pillar temple in Hanamkonda, and the temples in the Warangal fort, which also includes the enormous, deserted Swayambhunadha temple complex.

Temple of a Thousand Pillars

- Rudra Deva built the Rudreshwara Swamy Temple, popularly known as the Thousand Pillar Temple, in 1163 AD. One of the best specimens of Kakatiya architecture and sculpture is this temple.

At Gateway, Keerthi Thoranas:

- Keerthi Thoranas is another example of a unique Kakatiya design utilized only in this region for the gateways to temple complexes.
- **Buildings that are earthquake-resistant employing iron dowels and sandbox technology:**
- Kakatiya built magnificent structures that can endure powerful earthquakes around 800 years ago.
- Two great cases of sandbox-built structures that can withstand earthquakes are the Ramappa Temple and the 1000 Pillar Temple.
- Kakatiya utilized the sand to build the building's foundations. Depending on the size, foundations were filled with a powdered mixture of granite, jaggery, and Terminalia chebula (known in Telugu as karakakaya) to make the sand mixture more durable.
- On this Sand Mixture foundation, only substantial, weighty structures have been built.
- They also fastened the stones of walls, pillars, and temple rooftops with iron dowels to decrease the impacts of seismic vibrations.
- Each of the boulders used to construct these dowels had tiny tunnels or holes drilled through them into which melted iron was poured.
- These dowels firmly hold the rocks together as a result, making the entire building stronger and fitting like a frame.

Detailed Carvings:

- The carvings in the temples range in subject matter from upana to prasthara.
- The other most intriguing details include the lattice window and doorframes, which are joined to the pillars by exquisite open works.

Location Near Tank, Temple, and Town:

- The connection between the Tank, Temple, and Town that is a hallmark of Kakatiya architecture is another distinguishing attribute.
- They built the temples next to the bodies of water (such lakes and tanks) they had made.
- The development of thriving communities with interconnected temples was invariably a result of water tanks (structures used to conserve water).

The Nandi Mantapa:

- At the entrance to the Shiva shrine, as in all Shiva temples, stands a large Nandi.
- Black basalt was used to carve the colossal structure of Nandi.

Shrines of Shiva Facing East:

- The other shrines face south and west, whereas Shiva's shrine faces east.
- This was so that the early morning sun's rays would shine directly on the Shiva Lingam, as requested by the Kakatiya, who were followers of Lord Shiva.

The Star Style:

- The Ramappa temple and every Kakatiya temple building are shaped like stars.

Ramappa Temple

- The Ramappa temple was constructed in 1213 AD during the Kakatiya Empire's rule by Recharla Rudra, a commander of Kakatiya monarch Ganapati Deva.

- The presiding deity (Shivalingam) in this place is Ramalingeswara Swamy.
- It is also referred to as the Ramappa temple after the 40-year sculptor who created it.
- Only this particular temple bears the artist's name.
- The Ramalingeswaram temple was built over the course of 40 years, beginning in 1173 AD and ending in 1213 AD.

Waters and drainage system:

- The temple's surrounding rainwater drainage system sheds light on the Kakatiyas' advanced technological skills.
- Ramappa Lake, which is next to the temple, is always full with water.
- A levee and sluices were utilized to form the lake between the two mounds.
- The water level is 35 feet, and it has a 2,912 TMC storage capacity. The pond is 610 meters long.
- Two sluices are used by farmers to cultivate two crops annually on roughly 10,000 acres. This pond continues to be the primary one nearby.

Resources Used:

- The temple was constructed using stone. But the Sanctorum was built of thin brick to lower the weight of the temple in conformity with the properties of the land.
- These bricks float on water and are smaller than those used nowadays. The nation has never used such bricks, and it is still unknown how they were manufactured.
- Inside the temple, the maha mandapam and parts of the sculptures are made entirely of black stone, while the façade is built of red and white stones.

Sculptures or themes:

- The Ramayana, the Mahabharata, the Shivatandavam, and the Sivakalyanam dance styles are all shown in beautiful sculptures.
- Additionally, the sculptures feature significant portions of the Ramayana, Mahabharata, Ksheera Sagara Mathanam, and Sivaparvati Kalyanam. Additionally featured are dance and martial arts.
- Around the temple are twelve statues depicting Madanikas, Naginis, and Koyastris in various poses. A couple of the statues highlight the role that women played in the Kakatiya kingdom as well as their ornamentation.
- The Nandi idol faces the sanctum, while the Kateshwara and Kameshwara temples are on the left and right, respectively.
- The sculptures in the temple focused mostly on the Perini Shivatandava.

Technology Related to Earthquakes:

- The Ramappa temple, which dates back 800 years and was constructed employing sandbox technology, is still intact today.
- A three-meter-deep foundation is dug and filled with sand at the temple construction site. Maintaining moisture is important.
- On the sand, stones were stacked to create the temple.

Other characteristics include:

- The Shivalingam in the Sanctorum is clearly visible even without electric lighting. In front of the Sanctorum, in the mahamandapana, are four large black stone pillars. The lingam seems brighter as the light from the outside catches it.

- In some places, there are pictures of Egyptians and Persians. They are known to have communicated with outsiders throughout the Kakatiya dynasty. There are also few statues of Buddhists and Jains.

Overview of the Kakatiya Dynasty:

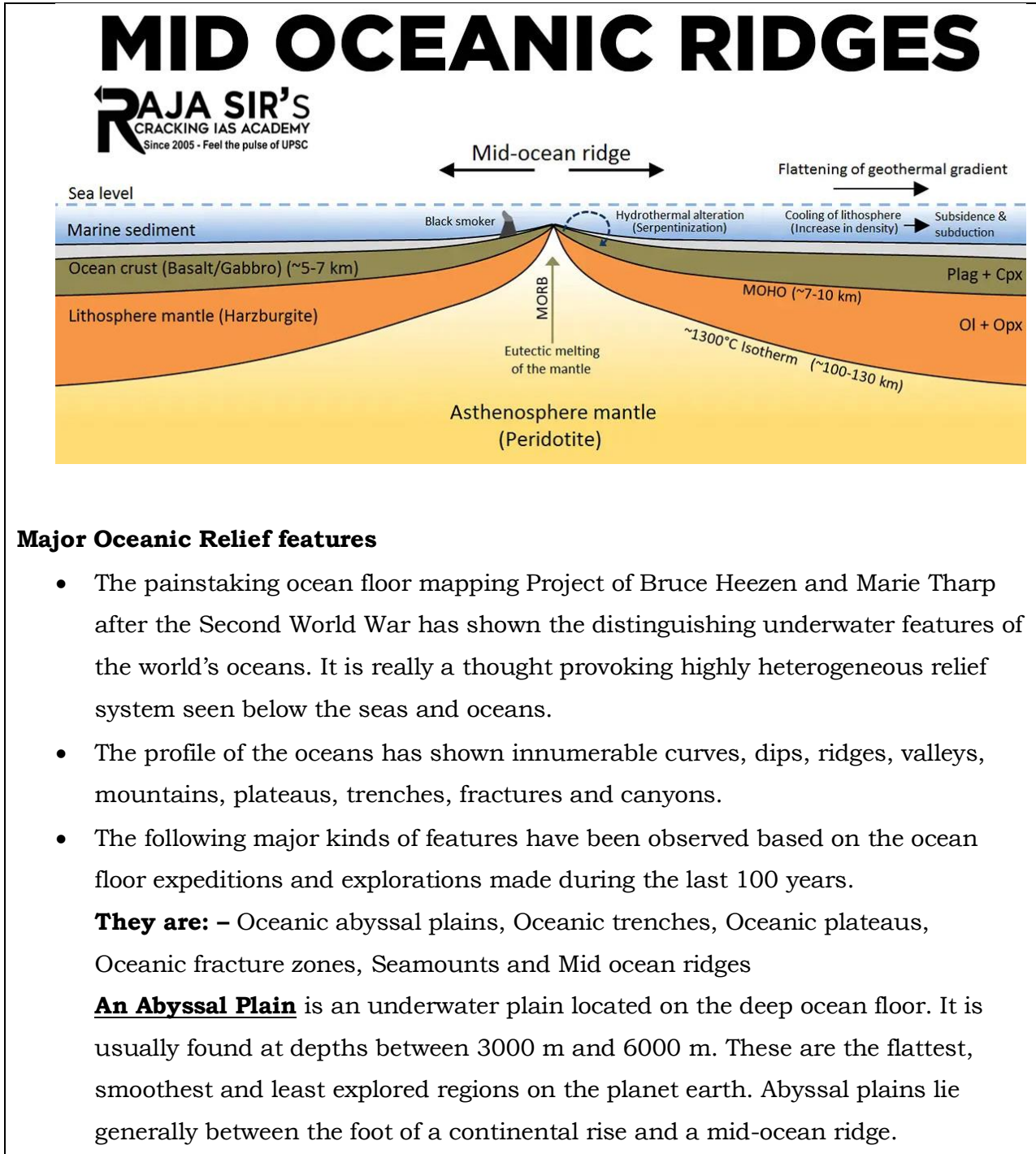
- The Kakatiya dynasty of South India dominated the majority of the eastern Deccan region, which today encompasses Telangana and Andhra Pradesh, as well as a tiny piece of eastern Karnataka and southern Odisha, between the 12th and 14th centuries.
- Orugallu, today known as Warangal, served as their capital.
- The Rashtrakutas and Western Chalukyas were feudatories to the early Kakatiya monarchs for more than two centuries.
- They took over the area in 1163 CE under Prataparudra I by putting down other Chalukya subjects in Telangana.
- Ganapati Deva (1199–1262) considerably expanded Kakatiya territory in the 1230s and established Kakatiya sovereignty over Telugu-speaking lowland delta districts close to the Godavari and Krishna rivers.
- Ganapati Deva was followed by Rudrama Devi (1262–1289), one of the few queens in Indian history.
- When Marco Polo visited India between 1289 and 1293, he spoke highly of Rudrama Devi's suzerainty and temperament.
- She was successful in halting raids into Kakatiyan land by the Devagiri Yadavas (Seuna).
- Alauddin Khilji of the Delhi Sultanate invaded the Kakatiya territory in 1303, which was disastrous for the Turks.

- In 1323, the Kakatiya army bravely resisted Ulugh Khan's second attack, but they were ultimately defeated.
- During the Kakatiya dynasty, a distinctive architectural style also emerged; famous examples include the Warangal Fort, the Hanamkonda Thousand Pillar Temple, the Ramappa Temple in Palampet, and the Kota Gullu in Ghanpur.
- The Kakatiya era is well-documented by inscriptions, which include over 1,000 stone inscriptions and 12 copper-plate inscriptions.
- One of the sources is a book released by the Government of Andhra Pradesh in 1978 by P.V.P. Sastry on the history of the Kakatiyas.

9. Mid-Oceanic Ridges

- The study of ocean floor has been made through various underwater expeditions and explorations. These underwater explorations have shown very contrasting and spectacular features inside the seas and oceans. When there is a Tsunami, everyone will say that it is due to the origin of earthquake below the sea floors. It is also a fact that the Earth's tectonic processes are happening along the plate boundaries. These boundaries are very distinct lithological portions existing below the seas and oceans. The modern ocean floor maps have provided enormous opportunities to understand these underwater features. They also helped us to know the theories behind the earth's ongoing tectonic processes.
- Ocean's morphological features vary with reference to their site, location, origin, morphology, lithology and dynamics of the water masses.
- The general profile of oceans include the Continental Shelf, Continental Slope and the Deep Ocean basins. Each one of these have their own variations in spread, depth, slope and hydrodynamics.

- The life in the marine waters depend on the depth, air-sea interactions, radiation, hydrodynamics, morphology and the physico-chemical conditions of the oceans.
- The Circulation of ocean waters, as waves and currents, and the interaction of oceans with the atmosphere, have very significant effects on the weather and climate of the entire globe.
- There are several kinds of distinct and most striking features observed on the ocean bottoms.
- These underwater relief features are very essential to our human understanding about the earth, oceans, oceanic crusts, tectonic processes and their impacts.
- Among them, the Mid Ocean ridges are very unique structures.
- The Mid Ocean Ridges, as the name implies, exist mostly in the middle of the ocean basins, where the divergent plate boundaries are located. The theory of Plate Tectonics has indicated many major tectonic processes which also include:
 - the release of convection currents along Divergent Plate Boundaries,
 - the origin of Mid Ocean ridges and
 - the spreading of the sea floor.
- All these processes are everlasting phenomena on the Planet Earth.



Major Oceanic Relief features

- The painstaking ocean floor mapping Project of Bruce Heezen and Marie Tharp after the Second World War has shown the distinguishing underwater features of the world’s oceans. It is really a thought provoking highly heterogeneous relief system seen below the seas and oceans.
- The profile of the oceans has shown innumerable curves, dips, ridges, valleys, mountains, plateaus, trenches, fractures and canyons.
- The following major kinds of features have been observed based on the ocean floor expeditions and explorations made during the last 100 years.

They are: – Oceanic abyssal plains, Oceanic trenches, Oceanic plateaus, Oceanic fracture zones, Seamounts and Mid ocean ridges

An Abyssal Plain is an underwater plain located on the deep ocean floor. It is usually found at depths between 3000 m and 6000 m. These are the flattest, smoothest and least explored regions on the planet earth. Abyssal plains lie generally between the foot of a continental rise and a mid-ocean ridge.

Oceanic Trenches are long, narrow topographic depressions of the sea bed.

They are the boundary zones of lithospheric plates. An oceanic trench is a type of convergent boundary at which two lithospheric slabs meet. Trenches are generally parallel to the volcanic arcs. Oceanic Trenches extend 3 to 4 km deeper below the level of the surrounding ocean floor. The greatest depth is seen at the Challenger Deep of the Marianas Trench in the northwest Pacific Ocean. It extends upto a depth of 10911 m below the sea level. There are about 30 notable trenches existing in different oceans of the globe.

- An **Oceanic Plateau** is a large relatively flat region under the marine waters. They rise well above the average level of the seabed. There are about 16 oceanic plateaus existing in different regions of the oceans.
- A **seamount** is an underwater mountain rising from the ocean floor. It does not reach the water surface. Hence, it is not an island. Some of them are formed from extinct volcanoes. A seamount rises from 1000 m to 4000 m depth of water. There are about 100,000 seamounts existing across the globe.

Submarine Canyons are long narrow and deep valleys cutting across the continental shelves and slopes. The depth of these Canyons may range from 600m to 3000m.

- Among these, the **Mid Oceanic Ridges are the most remarkable features** existing along the Divergent plate boundaries. These are underwater mountain chains. They are not similar to the mountains of continents. The Mid Oceanic ridges cover about 23% of the earth's surface. Their origin, extent and distribution are essential aspects to be studied in oceanography and physical geography.

Mid-ocean ridge

- One of the most striking features of the ocean floor is the distribution of mid oceanic ridges. These ridges are mountain-like structures standing well above the deep ocean floors. The mid oceanic ridges are, in total, 65,000 km long and cover almost 23% of the earth's surface. These are considered as the world's

largest mountain ranges existing below marine waters. They exist as chains, in the centre of the oceanic basins. These are rugged features. They stand 1 to 3 km above the deep ocean floors. The most prominent feature of a ridge is its steep-sided central valley called rift valley. A rift valley may be 25 to 50 km wide and 1 to 2 km deep in its profile. The rift valley of a mid oceanic ridge is bordered by rugged mountains with the tallest peaks. These peaks may rise upto 2 km above the sea surface also as seen in some locations. Upwelling of molten mantle rock has created these rift zones.

- The mid oceanic ridges are formed along the boundary between two divergent tectonic plates. These zones are tectonically active regions. Hence, small earthquakes occur frequently on crests of mid ocean ridges. These earthquakes coincide with the location of the central rift valleys. They are the most active volcanic regions on the earth.
- At the mid oceanic ridges, two plates move away from each other. This process is called as sea-floor spreading and it creates a new seafloor. Ocean basins were formed through such breakup of continents and movement of plates. Thick continental crust was subjected to heat flow from earth's interior. When the warm mantle expands, the continental crust is domed and stretched away from each other thereby forming the rift valleys. Some form of thermal convection within the asthenosphere appears to create
- New lithosphere at the oceanic ridges and rises. This simultaneously made the old lithosphere back into the mantle to be subducted beneath oceanic trench systems.
- The spreading rates of mid ocean ridges may be 2-3 cm per year. A mid ocean ridge has a steeper and more irregular topography as a result of a low spreading rate. The ridge consists of a high central axial zone, with a narrow crest.

- The mid ocean ridges and rises are offset by rugged fault scars called fracture zones. These linear bands of mountains and troughs intersect all oceanic ridges at intervals in right angles.
- The system of mid-ocean ridges ranks with the continents and ocean basins as one of the three main units exposed at the earth's surface. They are – the topography, structure, areal extent and geological importance.
- The Mid-Atlantic ridge is the best known example in the world.
- It is 40,000 miles long encircling the whole world.
- The mid-Atlantic Ridge is centrally located between the eastern and western margins of the Atlantic Ocean. It is also about 2000 km wide.
- It is elongated in a general North-South direction and follows a sinuous course roughly parallel to the present coastlines. With reference to areal extent, it is one-third of the entire Atlantic ocean.

Formation of Oceanic ridges

- Mid ocean ridges are characteristic of sea floor spreading processes. These are very active zones wherein a new magma is expected to emerge on the ocean floor regularly. There are two processes responsible for the ocean floor spreading

Mechanism –One is ridge-push and slab-pull process. Ridge-push occurs when the ridge pushes the tectonic plate away from the ridge, often towards the subduction zone. At the subduction zone, slab -pull come into effect. The other process is the mantle conveyor mechanism.

Mid oceanic ridges form new oceanic crusts.

- Convection currents from the mantle moves up as magma and leaves through weak zones as volcanic eruptions creating new crust upon cooling. These are called as mid ocean ridge basalts. The rocks making up the crust below the seafloor are youngest at the axis of the ridge. Most oceanic crust in the ocean

basins is less than 200 million years old. The crust is in a state of constant renewal at the ocean ridges .

- Moving away from the ridges, the depth of the ocean increases progressively. The greatest depths are in the ocean trenches.
- Alfred Wegener while proposing the old theory of continental drift in 1912, specified that mid oceanic ridges are continuously tearing open the ocean floors and make the magma to erupt from the deep interior. Later the theory of Plate Tectonics provided a better understanding of the movements of plates, spreading of ocean floors, underwater volcanic eruptions and formation of mid oceanic ridges.
- It is also found that 20 volcanic eruptions occur every year along the se mid oceanic ridges. It is also seen that every year about 2.5 sq.km of new sea floor is formed by this process. With a crustal thickness of 1 to 2 km, this amounts to about 4 Cu .Km of new oceanic crust formed every year.

Distribution of Mid-Ocean Ridges in the World

- Mid oceanic Ridges are distributed in almost all major oceans of the world. They range from the longest mid Atlantic Ridge of one ocean floor to a small ridge of another ocean.

The Atlantic Ocean has the following notable ridges.

1. **The Mid Atlantic Ridge** is a world famous ridge. It is the longest one in the world. It divides the Atlantic in the middle along the plate boundary. Its alignment is broken near the equator. It starts from Iceland in the north and ends near the Roubet Island near the Antarctica. The Mid Atlantic Ridge is exactly following the boundary of coastlines and continental margins on both sides of the ocean. It is flanked by many ocean basins.

2. **The Reykjanes Ridge** –The Reykjanes Ridge exists in the Reykjanes Basin near Iceland as the starting point of Mid Atlantic Ridge. Its continuity has been broken by a fracture zone.
3. **The Madeira Ridge** is a small oceanic ridge located near Madeira, west of Morocco.
4. **The Atlantic Indian Ridge** –The Atlantic Indian Ridge is existing at the Southern end of Mid Atlantic Ridge. It is about 2000 km long. It is located along the northern boundary of the Atlantic – Indian Basin.
5. **The South Scotia Ridge** –The South Scotia Ridge is located near the southern tip of south America in the Scotia Sea.
6. **The Zapiola Ridge**– The Zapiola Ridge is a small ridge in the Argentine Basin east of Argentina.
7. **The America** –Antarctica Ridge. The America – Antarctica Ridge is located in the Southern Ocean, North of Antarctica. It has a North East – South West alignment. It is 1500 km long.
8. **The Astrid Ridge** –The Astrid Ridge is a small ridge located in the Lazarev sea of Antarctica. It is at the southern part of Atlantic-Indian Basin.
9. **The Parnaiba Ridge** –The Parnaiba Ridge is a minor ridge located near the equator in the west Atlantic and east of Amazon delta.
10. **Belem Ridge** is yet another one in the Atlantic Ocean.
11. **The Ceard Ridge** –The Ceard Ridge is located in the western end of Atlantic Ocean near the equator.
12. **The Barracuda Ridge**–The Barracuda Ridge is located North of Barbados.
13. **The Blake Bahama Ridge** –The Blake Bahama Ridge is located closer to Bahamas in the West Atlantic.
14. **The Eirik Ridge** –The Eirik Ridge is a minor oceanic ridge located in the North Atlantic existing near the south of Greenland.
15. **The West Scotia Ridge** –The West Scotia Ridge is located in the western parts of Scotia Sea.

16. **The Newfoundland Ridge** –The Newfoundland Ridge is located in the north west Atlantic ocean near
17. **The Walvis Ridge** –The Walvis Ridge is located in the Southern Atlantic west of Namibia of South Africa.
18. **The Hatton Ridge** –The Hatton Ridge is parallel to Reykjanes Ridge in the Iceland Basin.

The Pacific ocean has the following notable ridges:

1. **Gorda Ridges** are located west of north America near Cascade mountain ranges.
2. **Kyushu– Palau Ridge** is located in the middle of Philippine Sea.
3. **South Honshu Ridge**
4. **West Norfolk Ridge** and **Norfolk Ridge** are located near the Norfolk Island of Australia.
5. **Kermadec Ridge** is located along the western parts of Southwest Pacific basin.
6. **Robbie Ridge** is located to the southwest of Phoenix islands. It is a north-south trending ridge. It is parallel to the Kermadec trench.
7. **Hawaiian Ridge** is located Northwest of Hawaii.
8. **Christmas Ridge** and **Necker Ridge** are in the Central Pacific basin southwest of Hawaii.
9. **Tehuantepec Ridge** is located in the Guatemala Basin South of Salina Cruz.
10. **Colon Ridge** exists in southern parts of Guatemala Basin between north and south America in the east pacific.
11. **Pacific Antarctic Ridge** is in the middle of the Southern ocean. It is an east-west trending ridge.
12. **Nazca Ridge** is located west of South America near Peru-Chile trench.
13. **Society Ridge** and **Tuamotu Ridge** are in the middle of the Pacific ocean near Society islands. It is in the southern Hemisphere.
14. **Macquarie Ridge** is along the boundary between Southern Ocean and the Tasman Sea and South of New Zealand.

15. **Caroline Ridge** is located near the Challenger Deep of Marianas Trench.
16. **Galapagos Ridge** is located west of South America near Andes.

The Ridges of Indian Ocean are the following:

1. **Ninety East Ridge.** It is a north-south trending ridge located in the middle of Cocos Basin and Mid-Indian Basin. It starts from the Andaman Sea in the North and extends upto the Broken Ridge in the South. It runs parallel to the longitude 90 degrees E.
2. **Investigator Ridge** is located in the southeastern parts of Cocos basin and east of Cocos islands.
3. **Chain Ridge** is located northeast of Somali Basin and North of Seychelles.
4. **Amirantle Ridge** is near the Seychelles, south of Somali basin.
5. **Davie Ridge** is located in the Mozambique Channel between Mozambique and Madagascar.
6. **Murray Ridge** is in the Arabian Sea, east of Oman.
7. **Carlsberg Ridge** is located south of Arabian Sea and northeast of Somali basin.
8. **Sheba Ridge** is located in the Gulf of Aden extending from the red Sea.
9. **Atlantic Indian Ridge** is in the south of Africa in the Atlantic-Indian basin.
10. **Southwest Indian Ridge** is located in the southwest parts of Indian ocean. It is trending along NE-SW direction.
11. **Mid Indian Ridge** is a Northwest to Southeast trending ridge in the middle of Indian Ocean.
12. **Broken Ridge** is an east-west trending ridge located to the west of Perth basin.
13. **Southeast Indian Ridge** is an east-west trending ridge located in the southeast parts of Indian Ocean.
14. **Hartog Ridge** is in the western parts of Perth basin west of Australia.
15. **East Indian Ridge** is near the Broken Ridge west of the Perth Basin.

Significance of Oceanic Ridge

- The alignments of the ridges have some common trends. The ridges are structurally displaced due to transform faults. Their alignments are cut across by a series of transform faults. The horizontal displacement along these zones bring more opportunities to expose the crustal weaknesses. The length of volcanic vents or pipes may be shortened and due to this more convection currents may emanate rapidly. Due to this, the rising of magma could be more easy.
- When there is subduction along the convergent boundaries, we get ocean trenches. Below the zones of subduction, the materials get crushed and may be melted. This zone of crushing is known as benioff zone. The scientists believe that the volcanic island arcs are formed from magmas produced by the partial melting of the descending and/or the overriding plate. Considerable volcanic activity worldwide is the result of subduction.
- Benioff is the zone which normally creates the focus for earthquakes and subsequently generate tsunamis from the oceans. Ocean ridges are the spreading centers. The ocean floor is mountainous and uneven, much like Earth's surface.
- Sea-floor spreading is driven by the crust formation along these mid-ocean ridges. They are like meandering undersea mountain ranges. They span on the Earth like the seams of a baseball. Oceanic crust is continually produced by magma welling up along the centerlines of the mid-ocean ridges. This new crust flows away from the ridgeline in two symmetric sheets, one on each side. The rate of sea-floor spreading resulting from this process is from 1–20 cm/yr, depending on the particular mid-ocean ridge

OUR TEST 9 QN.NO.56
TEST 18, QN.NO.91

Consider the following statements

1. Thickness of Troposphere at the equator. 2. Thickness of Troposphere at the poles.
Which of the following is / are true?. (a) 1>2 (b) 1=2 (c) 1<2 (d) 1 = Four times 2
The bulk of heat energy transferred in the troposphere is done by (a) Convection...



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Statement-I: Thickness of the troposphere at the equator is much greater as compared to poles.
Statement-II: At the equator, heat is transported to great heights by strong convectional currents.

Which one of the following is correct in respect of the above statements?

- (a) Both ..explains (b) Both .. does not ...
(c) Statement-I is correct, ..
(d) Statement-I is incorrect,

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Landmark: Tik Tak Cafe, **CHENNAI - 600040**

10.Mithila paintings / Madhubani Paintings

- Madhubani painting is one of the many famous Indian art forms. As it is practiced in the **Mithila region of Bihar and Nepal, it is called Mithila or Madhubani art.** Often characterized by **complex geometrical patterns,** these paintings are **known for representing ritual content** for particular occasions, including festivals, religious rituals, etc. The colors used in Madhubani paintings are usually derived from plants and other natural sources. These colors are often bright **and pigments like lampblack and ochre** are used to create black and brown respectively. Instead of contemporary brushes, objects **like twigs, matchsticks and even fingers are used to create the paintings.**



History & Evolution

- Madhubani paintings originated in the Mithila region of Bihar. Some of the **initial references** to the Madhubani painting can be **found in the Hindu epic Ramayana** when King Janaka, Sita's father, asks his painters to create Madhubani paintings for his daughter's wedding. The knowledge was passed down from generation to generation and the paintings began to adorn the houses of the region. The women of the village practiced these paintings on the walls of their respective home. Their paintings often illustrated their thoughts, hopes and dreams.
- Over time, Madhubani paintings became a part of festivities and special events like weddings. Slowly, this art attracted connoisseurs of art as many contemporary Indian artists took the art on global stage. The **traditional base of plastered mud wall was soon replaced by handmade paper, cloth and canvas**. Since the paintings have been confined to a limited geographical range, the themes as well as the style are more or less, the same.

Discovery of Madhubani paintings

- In the present context, Madhubani painting tradition was discovered by William G. Archer, a British colonial officer of the Madhubani district in 1934, when a massive earthquake hit Bihar. He chanced upon these paintings in the interior walls of the houses. He then housed a repository of much better quality and wider themed Madhubani paintings.

Style & Designs

The wall paintings of Madhubani can be divided into figurate and non-figurative wall paintings. The former is more colourful and richer in symbols. Madhubani paintings were initially practiced by different sects of people and hence

the paintings were categorized into five different styles, such as **Tantrik, Kohbar, Bharni, Godna, Katchni.**

Bharni

- Bharni means filling. In the Bharni style, the outlines of the images are drawn in bold and dark black and the images are filled with bright colors like red, yellow, orange, etc.

Kachni

- Kachni means line art. In the Kachni style, elaborate line paintings are made. The images are filled with closely drawn parallel lines or small dots. The thickness of the lines depends on the design. Mainly black and vermilion (brilliant red) colors are used to make the Kachni style paintings.

Godhana

- Godhana means tattoo. In the Godhana style, repeated images are arranged in parallel lines, concentric circles or rectangles to form various patterns. The images are drawn in black, but some are also filled with colors. Some Godhana style artists use cow dung washed handmade paper to make paintings.

Tantric

- Tantric is related to tantra. In the Tantric style, the colors and descriptions given in the Tantric texts are followed. The pictures of Hindu deities and yantras such as Shree Yantra, Shri Bhairav Yantra, etc. are depicted.

Kohbar

- The Kohbar has the most illustrious wall drawings. It is of three types: Kohbar of north Bihar/ madhubani style; Kohbar of eastern Uttar Pradesh; border drawings with creeper motifs.

- ***But today, these five different styles have been merged by contemporary artists.***

Themes

- The themes for the paintings differ depending on the function or the event that they are painted for. However, the **central theme remains love and fertility**. All deities of the Hindu pantheon and the rural local traditions can be found in the art.
- Some of the favoured subjects are – **bride surrounded by fishes and other auspicious symbols, bridegroom wearing his nuptial crown, hunting and ploughing scenes, trees, animals, etc.**
- A special chamber called Kohbar is made during the wedding ceremonies. At times even the floor would be painted, serving purpose similar to that of Alpana from Bengal. According to Mildred Archer:
- *“The subject matter of these paintings can be divided into two types. There are firstly the gods who bring their blessings to the bridal pair – Shiva and Kali and Ganesh. To these are sometimes added the figures of bride and bridegroom and their attendants. In the second place are various symbols of prosperity – elephants, fish, parrots, turtles, the sun and moon, a bamboo tree and a great circular lotus flower. These symbols will, it is hoped, bring good fortune to the young couple and bless them with children.”*
- Thus, the **themes** used in these paintings often **revolve around Hindu deities like Krishna, Rama, Lakshmi, Shiva, Durga and Saraswati**. Also, heavenly bodies like the **Sun and the Moon** often form the centerpiece of Madhubani paintings.
- One can also find paintings based on the **scenes from the royal courts and social events like weddings**. The usage of **geometrical patterns** is pretty much apparent in these paintings. The fact that these complex **mathematical patterns** were used in Madhubani paintings makes them more intriguing and special.

- These paintings are also known for their simplicity, for the brush and colors used are often derived from natural sources. While the paintings are largely made using powdered rice, colors derived from turmeric, pollen, pigments, indigo, various flowers, sandalwood, and leaves of various plants and trees, etc. Also, many natural sources are combined and are processed to obtain the desired colors. The colors are often prepared by the artists themselves. If the artists come across empty spaces even after completing the painting, they usually fill up those empty spaces with the **motifs of flowers, animals, birds and geometrical patterns. A double line is usually drawn as the border.**

In a nutshell,

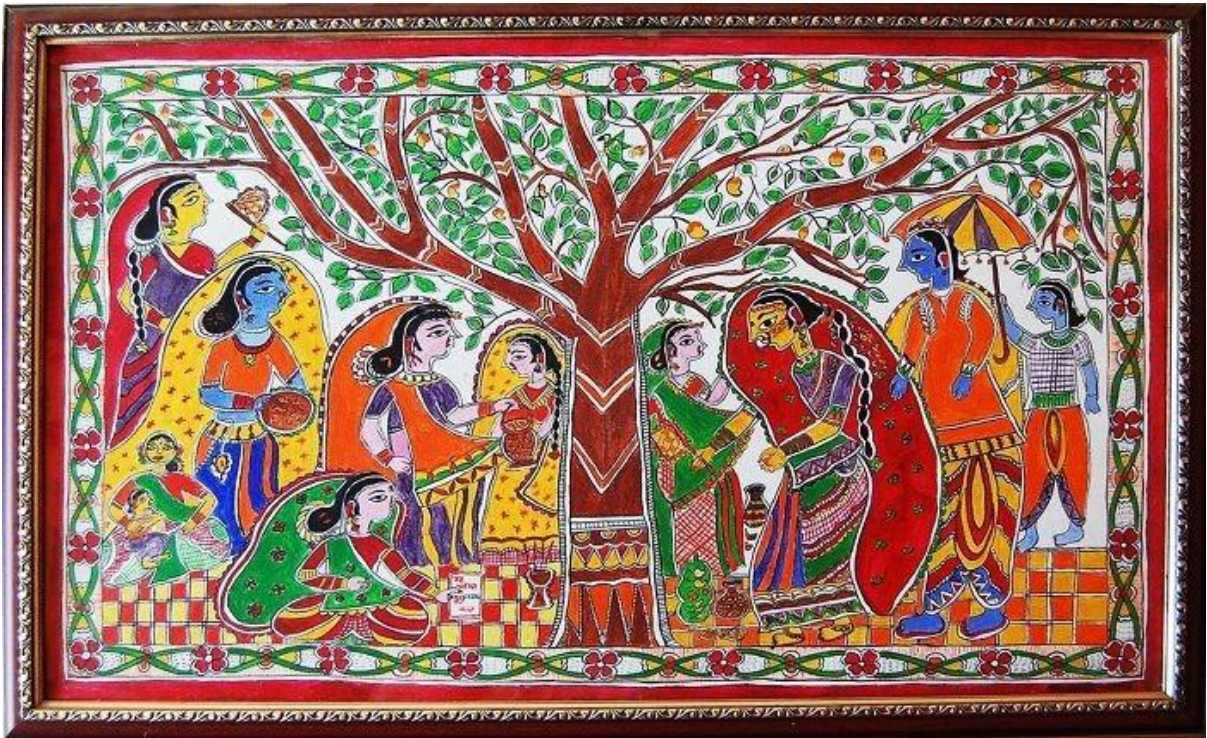
- **The themes and motifs of Madhubani art are drawn from mythology, rituals and local flora and fauna. Madhubani paintings mainly depict the following subjects: –**
 - Scenes
and stories from Puranas, Ramayana, Mahabharata and other Vedic literature.
 - Images of Hindu deities like Shiva-Parvati, Rama-Sita, Radha-Krishna, Lord Ganesha, Vishnu-Lakshmi, Lord Hanuman, Maa Saraswati, Maa Kali, Maa Durga, etc.
 - Human figures with large bulging eyes and pointed noses.
 - Heavenly bodies like the sun and moon.
 - Pictures
of elephants, fish, turtles, snakes, peacocks, parrots, trees, leaves, flowers, etc.

- Social events such as weddings and festivals. Auspicious marriage painting like Kohbar is related to wedding rituals. The central theme of Kohbar painting is love and
- Aspects of the daily life of women of the Mithila region.
- Folklore of King Shailesh of ancient Mithila.
- Rahu Puja.
- Tantric style Hindu deities and auspicious yantras.

Colours and Symbols

- Traditionally the colours were prepared by the women themselves. **Burnt jawaar or kajal was used for black; turmeric or chuna mixed with milk from banyan tree for yellow; pailash flower for orange; kusum flower for red; bilva leaf for green.** However today the readymade colours from bazaars are used. This has led to a richer and wider palette.
- Natural and bold colors like red, yellow, blue, black, etc. are used in Madhubani paintings. Some colors and their natural sources are mentioned below.
- **Black:** The black color is made by mixing soot with cow dung. Black is used to make borders and outlines.
- **Yellow:** The yellow color is made from turmeric.
- **White:** White color is made from rice powder.
- **Green:** The green color is made from the leaves of a wood apple tree.
- **Blue:** Blue color is obtained from indigo.
- **Red:** The red color is obtained from Kusum flowers or red sandalwood.
- **Orange:** The orange color is made from the Tesu flowers of the Palash tree.

- The **colours are governed by the five basic elements of life – earth, water, fire, sky, and air.** These are denoted by various shades; earth by yellow, water by white, fire by red, sky by blue and air by black. These elements are also explained using three basic forms – triangle, circle and square. A triangle that has its tip towards the sky denotes fire and the one with its tip downwards depict water. Square depicts the earth. The circumference of the circle is used to denote air, while the inner portion depicts sky. Sky and air, fire and water are inter-related. All these forms emerge from a bindu, which represents Shiva and Shakti. A mishra bindu is formed when the formless Shiva visualises his form in Shakti.



Symbols and Characteristics

- Some significant symbols in madhubani paintings are:

Parijat - Symbol of reproduction and fertility

- **Two peacocks** – Symbol of eternity
- **Elephant aripana** – Symbol of successful pregnancy
- **Lotus aripana** – Signifies sexual energy
- **Circle aripana** – God of creation
- **Parrot aripana** – Symbol of kama
- **Snake** – Power of regeneration
- **Mandalas** – To evoke love among the newly-weds.

A few important characteristics of Madhubani paintings

- The paintings are divided into horizontal and vertical sections to imply different time and space.
- The qualities of paintings vary between frescos and miniature style.
- The bodies of gods and goddesses are foreshortened and often distorted. Common amongst them are radha-krishna madhubani, ganesha madhubani painting, etc.
- The faces are shown in profile; however, the eyes have a frontal view. The eyes are painted after the whole painting is completed.

Making of the painting

- Thin **layers of mud and cow dung are used to coat the surface**. It **acts as a preservative** and a strengthening agent. It is considered auspicious and a harbinger of prosperity. It is followed by **imagery made using powdered rice and paint using fingers, bamboo twigs, cotton rags and nowadays pens**. Traditionally no space is left in the painting. It is filled with flowers, birds, animals, tattoo designs etc.
- **Modernisation**
- During the early 1980s, the Festivals of India gave an impetus to tribal and folk paintings through several cultural exchange programs in the United

d Kingdom. Today, modern madhubani paintings can also be found on sarees, stoles, bags, clocks, etc.

- The art of Mithila is unique, for here we can see a unique blend of comprehension, knowledge of Sanskrit and culture, vocabulary and iconography.

Notable Madhubani Artists

- This amazing art form is still kept alive because of the efforts of many artists who continue to practice Madhubani art. Many notable Madhubani artists have received national and international recognition. Some of them are mentioned below:

Some famous Madhubani painting artists are:

1. Jagdamba Devi

- Jagdamba Devi was an internationally recognized artist of Madhubani painting. She was awarded the National Award in the year 1970. She was the first artist to receive the Padma Shri in 1975 for her outstanding work in the field of Madhubani art.

2. Sita Devi

- Sita Devi was born in Jitwaripur village in Bihar. She was one of the earliest artists who started making Madhubani paintings on paper and specialized in the Bharni style of Madhubani art. She was awarded the National Award in the year 1975 and the Padma Shri Award in the year 1981.

3. Ganga Devi

- Ganga Devi was born in 1928 in the Mithila region of Bihar. She was an expert in the Kachni style of Madhubani art. She was awarded the National Award in the year 1976 and the Padma Shri Award in the year 1984.

4. Godawari Dutta

- Godawari Dutta is a well-known name in the field of Madhubani painting. She was awarded the National Award in the year 1980 and the Shilp Guru Award in the year 2006. She was also awarded the Padma Shri Award in the year 2019.

5. **Mahasundari Devi**

- Mahasundari Devi was born on 15 April 1922 in Madhubani district of Bihar. She was an expert in Madhubani art. She was awarded the National Award in the year 1982 and the Padma Shri Award in the year 2011.

6. **Baua Devi**

- Baua Devi was born in Jitwarpur village in Bihar. She specializes in Madhubani art and uses natural colors on handmade paper to make her paintings. She was awarded the National Award in the year 1984 and the Padma Shri Award in the year 2017.

7. **Bharti Dayal**

- Bharti Dayal of Darbhanga district, Bihar is a well-known name in the field of Madhubani art. She uses acrylic colors on canvas to make her paintings. She was awarded the National Merit Award in the year 2005 and the National Award in the year 2006.

Madhubani Painting in Modern Times

- Madhubani art is an important part of the life of people in a village called Ranti in present day Bihar. The women who practice this art form in the village use it as an opportunity to create awareness on social issues and to empower women. Artists like Karpuri Devi, Mahalaxmi and Dulari are playing key roles in teaching other women the importance of Madhubani painting. Their works are displayed in a museum in Japan. Also, there are several institutions near Mithila that teach Madhubani paintings to young artists. Some of the major centers that teach this art form are Beni

patti in Madhubani district, Gram Vikas Parishad in Ranti and Vaidehi in Madhubani. Artist Bharti Dayal owns a studio in New Delhi.

11. Who was Ahilya Bai Holkar?

- Maharani Ahilyabai Holkar (31 May 1725 – 13 August 1795) was the **Holkar Queen of the Maratha Malwa kingdom**, India.
- She is regarded as one of the most **visionary female rulers** of India. She is widely known for her **wisdom, courage, and administrative skills**.
- Ahilyabai's **husband, Khanderao Holkar, was killed in the battle of Kumbher in 1754**.
- **Twelve** years later, her **father-in-law, Malhar Rao Holkar, died**.
- **A year after** that, she was **crowned the queen** of Malwa kingdom. For the **next 28 years, Ahilyabai ruled over Malwa** in a just, wise, and knowledgeable manner.
- Under Ahilyabai's rule, Malwa **enjoyed relative peace, prosperity, and stability**, and her **capital, Maheshwar**, was turned into an oasis of literary, musical, artistic, and industrial pursuits.
 - She **welcomed stalwartssuch as Marathi poet Moropant, Shahir Ananta Gandhi**, and **Sanskrit scholar Khushali Ram** into her capital.
- She was instrumental in **spreading the message of dharma** and propagating **industrialization**.
- She **established a textile industry in Maheshwar, which today is very famous for its Maheshwari sarees**.
- She **tried to protect her kingdom from plundering invaders**.
 - She was **military-trained** and **personally led armies** into battle.
 - She **appointed Tukojirao Holkar** as the **Chief of Army**.
- She earned a reputation for **administering justice fairly** during her rule, without partiality or partisanship.
 - She **sentenced her only son**, found guilty of a capital offense, **to death** by being crushed by an elephant.

- She was a great **pioneer and builder of Hindu temples**.
 - She built hundreds of temples and Dharmashalas throughout India.
 - Her most **notable contribution** was the renovation and **repair of the famous Kashi Vishwanath Temple in 1780**.
- She also made some **landmark decisions** during her reign, including the **removal of traditional law confiscating the property of childless widows**.
- She **held daily public audiences** to help redress the problems of the common man.
- **John Keay**, the **British historian**, gave **the queen the title of 'The Philosopher Queen'**.
- She passed away on August 13, 1795, at the age of seventy.
- Her **throne** was then **succeeded by her commander-in-chief and nephew, Tukoji Rao Holkar**.

12. Vasudeo Balwant Phadke

- **Father of the Indian Armed Rebellion:** He was one of the first revolutionaries of India, also known as the '**Father of the Indian Armed Rebellion**'.
- **Inspired by:**
 - Speeches of leaders like Dadabhai Nauroji and M G Ranade inspired Phadke.
- **Contribution to the Indian Freedom Struggle:** Vasudev Balwant Phadke was **the first Indian leader** to go from village to village **to preach the mantra of swaraj and to encourage the people to rebel against foreign rule**.
 - In 1879, along with **his associates Gopal Hari Karve, Vishnu Gadre, Ganesh Dedhar, and others**, Phadke ji formed one of the first **revolutionary armies of India**.

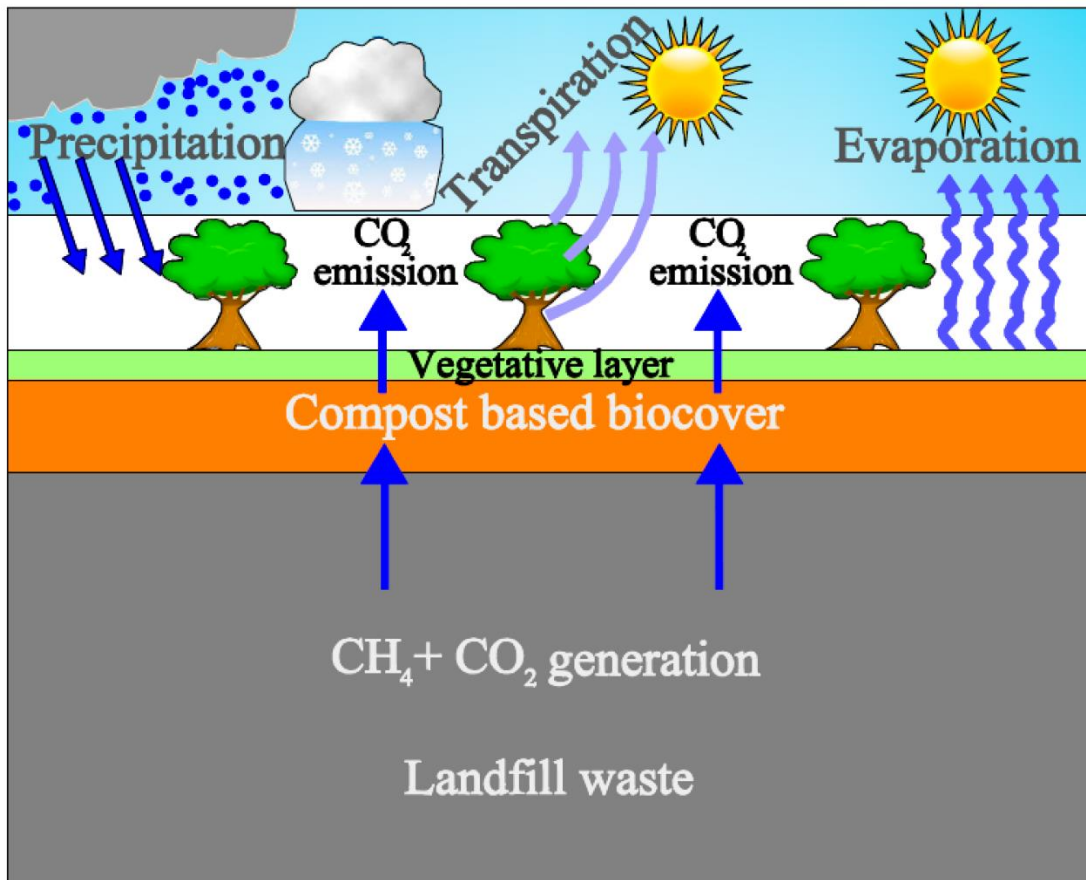
- **Established Poona Native Institution (now known as the Maharashtra Education Society):** Phadke ji along with Waman Prabhakar Bhave and Laxman Narhar Indapurkar, set up the Poona Native Institution in 1874.
- **Passing away:** 1883
- Factors that Influenced Vasudev Balwant Phadke to Rebel Against the Britishers
- **Deccan famine of the late 1870s:** The famine combined with the government's increased revenue demands added to people's misery.
- **Maharashtra famine:** In 1886-87, Phadke revolutionary group issued a proclamation condemning the government's economic policies.
- **Latent anger against the Britishers:** Vasudev Balwant Phadke resented his bosses for denying his requests for leave to be with his dying mother and later, to attend rituals for her first death anniversary
- **Public Organisations like Sarvajanic Sabha in Pune:** provided a platform where people could discuss the state of the country.
- **Influence of Lahuji Raghoji Salve: Salve gave arms training and generated feelings of patriotism in students' minds.**
 - Apart from Phadke, Salve's student's included Tilak and Mahatma Phule.
- **Tribal Support: He found support among the nomadic tribes residing near Pune, the Ramoshis, Kolis, Bhils and Dhangars, to organise a revolt.** With a 300-strong army, he began his armed struggle.
 - [Methods employed By Vasudev Balwant Phadke Ji](#)
- **Public lectures and Secret Meetings:** Vasudev Balwant Phadke delivered public lectures and tried mobilising people across Pune through secret meetings.
- **Radical action against the British:** He did not favour the petitions and prayer methods.
- **Guerilla warfare:** He tried to collect money and amass weapons to fight the British through guerrilla warfare.

- **Looting operations:** The wealthy did not heed his call and refused to help with arms or money. Phadke's party undertook some looting operations near Mumbai and the Konkan region to raise funds.
- **Swadeshi Vow:** He had taken the Swadeshi vow. He asked the youth to become entrepreneurs and industrialists because the war against the British would not be fought with arms alone.
- In the short span of his life, Vasudev Balwant Phadke paved the way for an organised armed movement that would fight for the freedom of India.

13.What is Biocover?

Biocovers are a **type of methane oxidation system** that utilizes the fine fraction material from landfill mining to effectively control methane emissions. These are porous material layers laid directly on top of a landfill which is then covered by an **oxidizing layer of mature compost**. It provides optimal conditions for **methanotrophic (methane-utilizing) bacteria** to thrive and act as biofilters, hence **controlling methane emissions** by converting methane to CO₂.

- They reduce **methane emissions from landfills and dumpsites**.
- The **fine fraction material recovered** from landfill mining is used to construct the biocover system. This fine fraction would otherwise be difficult to repurpose due to high contaminant levels.
- By using the fine fraction in the biocover, it provides a **sustainable solution for methane control**, especially for smaller to medium-sized landfills and dumpsites.
- This method shows promise for application in **India's over 3,000 legacy dumpsites**, which continuously generate methane and are prone to fires, making effective methane control critical for climate change mitigation.



- It consists of **two layers**: the **gas dispersion layer** and the **CH₄ oxidation layer**, where actual oxidation takes place.
- The microbial CH₄ oxidation process is carried out by a group of **methanotrophic bacteria** present in the soil biocover.
- The CH₄ oxidation layer **stops** a fraction of **CH₄** produced in landfill sites **from being released into the outer atmosphere**.
- Both **CH₄** and **oxygen** are required for reducing CH₄ emissions using the microbial CH₄ oxidation process in landfill biocover.
- The biocover layer on landfills functions as a CH₄ oxidation enhancer, converting CH₄ into **CO₂**, **water**, and **biomass**.

- **Methanotrops** are aerobes that have a special ability to **oxidise CH₄** under favourable conditions (**H₂O**) and **microbial mass**.

14. International Criminal Court (ICC): Structure and Function

International Criminal Court (ICC)

- It is the **first international permanent court** to investigate and prosecute individuals accused of serious international crimes.
- ICC's founding treaty, called the **Rome Statute** (adopted in 1998 entered into force in 2002), grants the ICC jurisdiction over 4 main crimes
- **Membership:** 124 countries are States Parties to Rome Statute of ICC.
- - **India, Israel, the US, Russia and China** are **not parties** to the Rome Statute.
 - Palestine became the **123rd member (2015)** and **Malaysia became 124th State party (2019)**.
- **Assembly of States Parties**, with 1 representative from each party, is the Court's management oversight and legislative.
- **Official languages:** English, French, Arabic, Chinese, Russian and Spanish.
- **Enforcement:** ICC's decisions are **binding**.
 - However, it **does not have its own police force** and relies on State cooperation, which is essential to the arrest and surrender of suspects.
- **Additional Components**
 - **Trust Fund for Victims (2004):** Provides assistance, support, and reparations to victims.
 - **Detention Centre:** Holds detainees in safe, secure, and humane custody.
- **Complementarity Principle:** The ICC complements national criminal systems and prosecutes only when states are unwilling or unable to do so genuinely.

- Jurisdiction of ICC under the Rome Statute
- **In case of Genocide, crimes against humanity or war crimes** (committed on or after 1 July 2002) which are-
 - Committed **by a State Party national**, or in **territory of a State Party**, or in a State that has accepted the jurisdiction of the Court.
 - **Referred** to the ICC Prosecutor **by the United Nations Security Council (UNSC)** under chapter VII of the UN Charter.
- **In case of Crimes of aggression:**
 - Crimes referred to the ICC Prosecutor by the **UN Security Council**, irrespective of whether it involves States Parties or non-States Parties.
 - Prosecutor may also **initiate an investigation on own initiative or upon request from a State Party.**
- **No jurisdiction with respect to any person under age of 18.**

4 Categories of crimes under ICC

 Genocide	 Crimes against humanity	 War crimes	 Crime of aggression
<ul style="list-style-type: none"> ● Specific intent to destroy a national, ethnic, racial or religious group by killing its members or by other means. 	<ul style="list-style-type: none"> ● Serious violations committed through large-scale attack against civilian population ● 5 forms listed in the Rome Statute includes offences like murder, rape, imprisonment, enforced disappearances, enslavement, torture, apartheid etc. 	<ul style="list-style-type: none"> ● Grave breaches of the Geneva conventions in the context of armed conflict ● Includes use of child soldiers; killing or torture of civilians/prisoners of war; intentional attacks against hospitals, historic monuments etc. 	<ul style="list-style-type: none"> ● Use of armed force by a State against the sovereignty, integrity or independence of another State.

Limitations of the International Criminal Court (ICC) in Criminal Justice

- **Lack of Enforcement Mechanism** as it relies on cooperation with countries for arrests, transfers, asset freezes, and sentence enforcement.
 - Further, **Non-States Parties (such as Israel) have no obligation to cooperate with the Court** on its requests for arrest and surrender.
 - Some major countries are not parties to the ICC.
- **Many State Parties are reluctant to cooperate with the Court's requests** for arrest and surrender.
 - So far, the **ICC has issued 46 arrest warrants, with only 21 of them having been detained** with the help of its member states.
- **Insufficient Checks and Balances** due to lack of effective oversight on the authority of the ICC prosecutor and judges.
- **Lack of Retrospective Jurisdiction** as ICC can only address crimes committed after 1st July 2002, when the Rome Statute came into force.
- **Scarcity of human resources and funds**, impacting its efficacy.
- **Allegations of Bias** with ICC being criticized as a **tool of Western imperialism** and **biased against weak states, especially Africa.**

[Why did India not join the Rome Statute?](#)

Subordination of the ICC to the UN Security Council, may potentially lead to political interference.



UN Security Council's power to bind non-States Parties to the ICC, violates principles of sovereignty.

Wide competence and **powers of the ICC prosecutor on a *proprio motu* basis** (without a referral from the Security Council or a state party) **could be misused for political purposes.**

Exclusion of nuclear weapons and terrorism from ICC jurisdiction whose use would constitute a war crime.

- **As per Article 16 of Rome statute**, no investigation may be commenced after the Security Council has requested ICC to that effect.

Comparison between ICC and ICJ

Parameters	 ICC	 ICJ
Genesis	Rome Statute	Established in 1945 by UN Charter
HQ	Hague (Netherlands)	Peace Palace in The Hague (Netherlands)
Composition	18 judges , with 9-year, non-renewable term, in 3 divisions : Pre-Trial, Trial, and Appeals elected by Assembly of States Parties	15 judges elected to 9-year terms by UN General Assembly and the Security Council.
Cases	Holds only individuals criminally responsible for offences .	Hears 2 types of cases : • Legal disputes between States submitted to it by them (contentious cases) • Requests for advisory opinions on legal questions referred to it by UN organs/ specialized agencies

- **For effective functioning of ICC** all States Parties should put in place **effective national frameworks** to cooperate fully with the ICC. **There should be Concrete arrest strategies** required to arrest the suspects. **Also, ICC member states should focus on electing highly qualified judges** with knowledge and experience in criminal law and procedure.

15. Why do Bihar and Andhra Pradesh demand Special Category Status?

Special Category Status

- SCS is a classification given by the Centre to assist development of states that face geographical and socio-economic disadvantages.
- The Constitution does not make a provision for SCS and this classification was later done on the recommendations of the 5th Finance Commission in 1969.
- Status was first accorded to Jammu and Kashmir, Assam and Nagaland in 1969.

- SCS for plan assistance was granted in the past by the National Development Council of the erstwhile Planning Commission.
- Eleven States including Assam, Nagaland, Himachal Pradesh, Manipur, Meghalaya, Sikkim, Tripura, Arunachal Pradesh, Mizoram, Uttarakhand and Telangana have been accorded the special category state status.
- Telangana, the newest State of India, was accorded the status as it was carved out of another state Andhra Pradesh.
- SCS is different from Special status which imparts enhanced legislative and political rights, while SCS deals with only economic and financial aspects.
- For instance, J&K used to have Special status before Article 370 was repealed.
- Parameters (Based on Gadgil Formula):
- Hilly Terrain;
- Low Population Density and/or Sizeable Share of Tribal Population;
- Strategic Location along Borders with Neighbouring Countries;
- Economic and Infrastructure Backwardness; and
- Nonviable Nature of State finances.

Benefits

- In the past, SCS states used to receive approximately 30% of central assistance, determined by the Gadgil-Mukherjee formula.
- However, following the recommendations of the 14th and 15th Finance Commissions (FC) and the dissolution of the Planning Commission, this assistance to SCS States has been subsumed in an increased devolution of the divisible pool funds for all States (increased to 41% in the 15th FC from 32%).
- The Centre pays 90% of the funds required in a Centrally-Sponsored Scheme to special category status states as against 60% or 75% in case of other states, while the remaining funds are provided by the state governments.
- Unspent money in a financial year does not lapse and is carried forward.

- Significant concessions are provided to these states in excise and customs duties, income tax and corporate tax.
- 30% of the Centre's Gross Budget goes to Special Category states.

Why is Bihar demanding the SCS?

- The poverty and backwardness of the State are argued to be because of the lack of natural resources, continuous supply of water for irrigation, regular floods in the northern region and severe droughts in the southern part of the State.
- Simultaneously, the bifurcation of the State led to the shifting of industries to Jharkhand and created a dearth of employment and investment opportunities.
- With a per-capita GDP of around ₹54,000, Bihar has consistently been one of the poorest States.

Why is Andhra Pradesh demanding the SCS?

- Andhra Pradesh, since its bifurcation in 2014, has asked for SCS on the basis of shrunken fiscal space and revenue loss due to its capital city Hyderabad going to Telangana.
- Former Prime Minister Singh had said that SCS would be “extended to the successor State of Andhra Pradesh ... for a period of five years”, and this oral statement has been the basis of the State's claim for SCS.

Concerns Related to Special Category Status

- *Resource Allocation:* Granting SCS entails providing additional financial assistance to the state, which can strain the central government's resources. Balancing the allocation of funds among various states becomes crucial, and granting SCS might lead to disparities or dissatisfaction among non-SCS states.

- *Dependency on Central Assistance:* States with SCS often become heavily reliant on central assistance. This could potentially discourage efforts toward self-sufficiency and independent economic growth strategies.
- *Implementation Challenges:* Even after the grant of SCS, there might be challenges in utilizing the funds effectively due to administrative inefficiencies, corruption, or lack of proper planning. Ensuring that the allocated funds are used for intended purposes is a significant challenge.

Road ahead

- There is a need to revisit and refine the criteria for granting SCS to ensure fairness and transparency. Clearly define the parameters for eligibility based on socio-economic indicators, infrastructure development, and other relevant factors.
- There is a need to encourage states to create comprehensive development plans that focus on sustainable growth, job creation, infrastructure development, and human capital enhancement. SCS should be a part of a broader strategy for holistic development.
- Implement policies that gradually reduce states' dependency on central assistance by promoting self-sufficiency and economic diversification. Encourage states to generate their revenue streams.

16. Uttarakhand Uniform Civil Code

The Uttarakhand UCC is a law that establishes uniform rules related to marriage, divorce, succession, and other personal matters for all residents of the state, **except Scheduled Tribes**. It replaces the various religious personal laws with a common civil code. The key objectives of the UCC are:

- Promote equality before the law irrespective of religion
- Provide gender justice and protect the rights of women

- Simplify and standardize the complex personal law system
- Achieve social integration and reduce religion-based discrimination

Uttarakhand UCC

Law

Details

Marriage Age

21 years for men, 18 years for women

Mandatory

Marriage

Registration

All marriages must be legally recognized within 60 days, with penalties for non-compliance.

Divorce and

Maintenance

Divorce is granted by court on specific grounds. Specifies conditions for divorce and maintenance, ensuring rights for both men and women.

Live-in

Relationships

Must be registered with authorities. Imposes an obligation to register live-in relationships, defining them as a relationship between a man and a woman cohabiting in a shared household. Fails to include LGBTQIA+ community members.

Inheritance and

Property Rights

Equal rights for sons and daughters. Abolishes the coparcenary system, ensuring equal property rights for sons and daughters and eliminating the distinction between legitimate and illegitimate children. Stipulates equal inheritance rights, with the property to be divided equally among immediate family members or as per the scheme of intestate succession.

Adoption Rights

Allowed for all, including Muslims. Grants adoption rights to everyone, including Muslim women, and treats adopted children equally with biological children.

Legal Recognition of Children

Extends legal recognition to children born in void and voidable marriages, as well as those born in live-in relationships.

Ban on Polygamy and Child Marriage

Prohibits polygamy and child marriage, aiming to promote gender equality and social cohesion.

Ban on Halala and Iddat

Seeks to ban Islamic practices such as halala and iddat, simplifying divorce and remarriage procedures.

Exemption for Tribal Communities

Exempts tribal communities, constituting 2.9% of Uttarakhand's population

- **Uttarakhand's UCC affect marriage, divorce, and inheritance laws**
- The Uttarakhand UCC introduces several progressive changes to marriage, divorce, and succession laws:
- It establishes 21 years as the minimum marriageable age for men and 18 years for women across all religions. Child marriages are prohibited and criminalized.
- All marriages must be compulsorily registered within 60 days. Unregistered marriages can attract penalties.
- Specific grounds for divorce are laid down, such as adultery, cruelty, desertion etc. Divorce can only be granted by a court.

- The UCC mandates registration of live-in relationships and extends legal recognition to children born from such relationships. However, live-in relationships in the prohibited degrees are not allowed.
- It removes the concept of 'illegitimate children' and provides equal rights to children born out of wedlock.
- The UCC grants equal inheritance rights to sons and daughters. It also gives the deceased person's spouse and parents an equal share in the property.
- Adoption is made legal for all persons, including Muslims. The UCC simplifies the adoption procedure.

Criticisms surrounding the Uttarakhand's UCC

- While the stated objectives of the UCC are progressive, it has attracted criticism from certain quarters, especially religious minorities:
- Some Muslim leaders see the UCC as an encroachment on their religious freedom and personal laws. They argue that practices like polygamy and halala are intrinsic to Islam.
- Critics point out that the UCC is not truly 'uniform' as it exempts Scheduled Tribes and does not apply to issues like the Hindu Undivided Family.
- Concerns have been raised that the mandatory registration of live-in relationships could lead to moral policing and targeting of inter-faith couples.
- Women's rights activists argue that the UCC does not go far enough in addressing gender inequalities in existing laws related to marriage, divorce, maintenance etc.
- The UCC's provisions related to adoption and succession are seen as an attempt to homogenize the diverse cultural practices of different communities.

How will the Uttarakhand's UCC be implemented and enforced?

- The Uttarakhand government has constituted a Rules Making and Implementation Committee to frame the rules and regulations for operationalizing

the UCC. This committee will also oversee the setting up of the required administrative machinery.

- The Uttarakhand's UCC Law will be enforced through the existing judicial system, with family courts being the main forum for adjudicating disputes. The government plans to appoint special judges and train them in the new law.
- However, the actual implementation of the UCC could face challenges, such as:
 - Lack of awareness among the public about the provisions of the law
 - Resistance from religious bodies and traditional power structures
 - Inadequate state capacity to handle the increased volume of cases
 - Potential for misuse of certain provisions like live-in registration
 - What does the UCC mean for India's legal and social landscape?
- The enactment of the UCC in Uttarakhand marks a significant step towards the long-standing constitutional goal of a uniform civil code for all citizens. It could pave the way for similar laws in other states and eventually a national-level UCC.
- Proponents argue that the UCC is essential for promoting equality, unity, and modernity in India's diverse society. They believe it can reduce religious and gender discrimination, simplify the legal system, and aid national integration.
- But, critics caution that a hastily drafted UCC imposed from above could undermine India's pluralistic ethos and lead to a homogenized notion of Indian identity. They emphasize the need to evolve a consensus through democratic deliberation and preserve the positive aspects of community-specific personal laws.
- The Uttarakhand UCC is a bold and historic reform that seeks to fulfill the constitutional mandate of a uniform civil code. It has the potential to promote gender justice, simplify the legal system, and reduce religious discrimination. But, the UCC also raises valid concerns about preserving India's religious and cultural plurality. Its success will depend on its fair and sensitive implementation, as well as its ability to balance the competing imperatives of uniformity and diversity.

17. Impartiality and Non-Partisanship in Civil Services

- Impartiality and non-partisanship are foundational principles that underpin the effective functioning of civil services around the world. These principles ensure that civil servants perform their duties based on merit and fairness, without allowing personal political preferences or affiliations to influence their decisions. This ensures that the civil service remains a stable and reliable institution, capable of serving the government of the day and the public, regardless of which political party is in power.

Impartiality

- **Impartiality** means that civil servants must carry out their duties in a fair, unbiased, and objective manner. They should make decisions based on evidence and the public interest, rather than personal beliefs or the interests of any particular group. This principle is crucial for maintaining the trust of the public, as it assures them that services and decisions are administered fairly and without discrimination. **Example:** When awarding a government contract, an impartial civil servant would rigorously evaluate all bids based on the criteria of cost, quality, and efficiency, without favoring companies they personally prefer or that have political connections.

Non-Partisanship

- **Non-partisanship** refers to the principle that civil servants should not engage in political activities in a way that could compromise their ability to serve the government of the day in a neutral and objective manner. While civil servants have the right to hold personal political beliefs and to vote, they must avoid any public expression of these beliefs that could cast doubt on their ability to perform their duties impartially. **Example:** A high-ranking civil servant, regardless of their personal political beliefs, would need to provide the best possible advice to ministers and implement government policies effectively, even if a new administration comes into power with a different political ideology. This might

include drafting legislation, developing policy, or providing unbiased advice on the implications of different policy options.

Importance of Impartiality and Non-Partisanship

- Impartiality and non-partisanship are foundational principles in the civil service, crucial for maintaining the integrity, trust, and effectiveness of public administration. These principles ensure that civil servants perform their duties based on merit and fairness, rather than political influence or personal bias. The importance of these principles can be understood through several key aspects:
- **Public Trust:** Impartiality and non-partisanship help in building and maintaining public trust in government institutions. When citizens believe that civil servants make decisions based on evidence and fairness rather than political considerations, they are more likely to trust those decisions and the institutions making them.
- **Stability and Continuity:** Governments change due to elections and shifts in political power. A non-partisan civil service provides stability and continuity in the administration of public services and policy implementation, regardless of which political party is in power. This ensures that the functioning of the government remains consistent and effective, even in times of political transition.
- **Efficiency and Effectiveness:** Decisions made on the basis of merit, rather than political expediency, are more likely to result in efficient and effective public services. Impartiality ensures that policies and programs are designed and implemented based on evidence and best practices, rather than being influenced by partisan interests.
- **Equality and Fairness:** A commitment to impartiality ensures that all citizens are treated equally before the law and in their interactions with the state. This prevents discrimination and ensures that services are delivered fairly, without favoritism or bias towards particular groups or individuals.

- **Professionalism:** Impartiality and non-partisanship promote professionalism within the civil service. Civil servants are encouraged to develop and apply their expertise in policy-making and administration, free from political interference. This enhances the quality of public administration and the development of sound public policies.
- **Accountability:** When civil servants are impartial and not beholden to any political party, they can be held accountable for their actions and decisions based on clear and objective standards. This accountability is crucial for maintaining the integrity of public institutions and ensuring that public officials are acting in the best interests of the society as a whole.
- **Protection of Civil Liberties:** An impartial and non-partisan civil service is better positioned to protect civil liberties and uphold the rule of law. It can act as a check on the potential for abuse of power by elected officials, ensuring that government actions do not infringe upon the rights and freedoms of individuals.

Challenges in maintaining impartiality and non-partisanship

- Maintaining impartiality and non-partisanship in the civil service, while crucial, presents several challenges. These challenges stem from both internal and external pressures that can compromise the integrity and effectiveness of public administration. Some of the key challenges include:
- **Political Pressure:** Civil servants often face pressure from political leaders or parties to make decisions that favor a particular political agenda or interest, rather than what is best for the public or in line with policy evidence. Resisting such pressures while maintaining professional integrity can be difficult, especially when job security or career advancement may be perceived as being at stake.
- **Perception of Bias:** In highly polarized political environments, actions taken by civil servants, even if based on impartial and objective criteria, may be perceived

as biased or politically motivated. Managing public perceptions while staying true to the principles of impartiality and non-partisanship can be challenging.

- **Resource Constraints:** Limited resources and budgetary constraints can make it difficult for civil servants to perform their duties effectively and impartially. When resources are scarce, decisions about allocation can become contentious and may be seen as favoring one group over another, even if decisions are made based on objective criteria.
- **Complex Regulatory Environments:** Navigating complex laws, regulations, and bureaucratic procedures can be challenging for civil servants trying to maintain impartiality. The risk of inadvertently favoring certain interests or interpretations can arise, especially in areas where regulations are subject to change or are open to different interpretations.
- **Social Media and Public Scrutiny:** The rise of social media and instant communication has increased the scrutiny of civil servants' actions. This can lead to a heightened fear of criticism or backlash, potentially influencing decision-making processes and the ability to remain impartial.
- **Personal Beliefs and Biases:** Civil servants, like all individuals, have their own personal beliefs, values, and biases. Recognizing and managing these inherent biases to ensure they do not influence professional duties is a continuous challenge.
- **Lack of Clear Guidelines:** In some cases, the absence of clear guidelines or policies on how to navigate complex or sensitive issues can leave civil servants without the necessary support to make impartial decisions. This can be particularly challenging in situations that require balancing competing interests or values.
- **Interference in Civil Service Operations:** Attempts by political figures to interfere with the recruitment, promotion, or dismissal of civil servants based on political loyalty rather than merit can undermine the principles of impartiality and

non-partisanship. Ensuring that civil service operations remain free from such interference is an ongoing challenge.

- **Cultural and Organizational Factors:** The culture within a civil service organization can either support or hinder impartiality and non-partisanship. Organizations that lack a strong culture of professionalism, ethics, and accountability may find it more difficult to uphold these principles.

18. Gaps in India's Fiscal Federalism

Fiscal Federalism

- It is a critical aspect of governance that deals with the division of financial powers and responsibilities between the Union and State governments within the framework of a federal system.
- It focuses on responsibilities (including finances) among federal, state, and local governments to improve economic efficiency and achieve various public policy objectives.

Federal Government

– It is a form of government that has a **multi-layered structure**, with all orders of government having **some independent** as well as **shared responsibilities of decision-making**.

– Federalism represents either a **'coming together'** or a **'holding together'** of constituent geographic units.

a. **'Coming together'** has been the guiding framework for mature federations such as the United States, Canada, and, more recently, the European Union.

b. The **'holding together'** view of federalism, also called **'new**

federalism' represents an attempt to decentralise responsibilities to state-local orders of government to overcome regional and local discontent with central policies.

c. It is the driving force behind the current interest in principles of federalism in unitary countries and in **relatively newer federations such as Brazil and India** and **emerging federations such as Iraq, Spain and South Africa.**

Fiscal Federalism in India

- **Shifts in Fiscal Landscape:**The fiscal landscape has been altered by several factors, including the **shift from a planned economy to a market-mediated economic system**, the transformation of a **two-tier federation into a multi-tier fiscal system** following the **73rd and 74th Constitutional Amendments**, the abolition of the **Planning Commission** and its replacement with NITI Aayog, the passing of the **Fiscal Responsibility and Budget Management (FRBM) Act**, and the introduction of the **Goods and Services Tax (GST) Act**.
 - These changes have had varying consequences on India's federalism.
- **Vertical and Horizontal Imbalances:**The Indian Constitution, while expressly vesting the **Centre with greater powers of taxation**, also provides for an institutional mechanism — **the Finance Commission** — to determine the **share of the States in the Central tax revenues** by way of **correcting the vertical imbalance(between the Centre and the States)** as well as the **horizontal imbalance**, the one between the States with varying fiscal capacities but similar responsibilities in the provision of public services.
 - The founding fathers of the Constitution provided that the Centre shall share its tax revenues with the states as well as provide grants from the Consolidated Fund as per a formula decided by the **Finance Commission** every five years.

- **Federal Tax System:** India has a **three-tier federal tax system**, with the powers of the Centre, states, and local bodies to collect taxes clearly demarcated.
 - The **Central government** has the **power to collect taxes** on incomes of individuals and businesses, as well as indirect taxes such as the central goods and services tax, integrated goods and services tax, and customs. The Centre also **collects surcharges and cesses on taxes**.
 - **States collect state GST**, stamp duty, land revenue, state excise, and professional tax.
 - **Local bodies** collect property/house tax, tolls, and taxes on utilities such as electricity and water.

Constitutional Provisions

– The Constitution of India delineates tax bases between the Union and States listing them in the **Union List and the State List** respectively (as provided in the **Seventh Schedule under Art 246**).

a. There was/is **no taxation provision in the Concurrent List**.

– However, when GST had to be introduced, it needed to be provided for a concurrent base for which **Article 246A was inserted** (as **101st Amendment in August 2016**).

a. It enabled the Union to make law for **CGST (central GST) and IGST (integrated GST) and the States could legislate for SGST**.

– **Article 270** of the Constitution provides for the scheme of **distribution of net tax proceeds** collected by the Union government between the Centre and the States.

Note:

– The **net divisible pool, or net proceeds**, is that part of the gross tax revenue from which a share would have to be vertically devolved by the Union to all States.

– Annual estimates of net proceeds can be obtained by deducting cesses, surcharges, and costs of collection of taxes from the gross tax revenue.

- a. Such shares are assigned by each FC for a five-year period.
- b. Cesses and surcharges under **Article 270 and Article 271** were kept out of the net proceeds.

Challenges related to Fiscal Federalism in India

- **Centralization and Market-Mediated Economic System:** The shift from a planned economy to a market-mediated economic system, the transformation of a two-tier federation into a multi-tier fiscal system following the 73rd and 74th Constitutional Amendments, and the introduction of the Goods and Services Tax (GST) Act have **altered the fiscal landscape**.
 - It led to dissatisfaction due to the highly centralised system, impediments to a common market, and regional aspirations for statehood.
- **GST and Fiscal Autonomy:** The introduction of GST has transformed fiscal federalism in the country. While it has led to steady growth of GST revenue, indicating the success of the reform, it has also been cited as a restriction on the powers of the states.
 - Critics argue on the autonomy of states with the introduction of GST.
- **Equity and Income/Growth Disparities:** There has been a long-term stability in the shares of the Centre and the States in the combined tax revenues.
 - However, the actual experience in India has been astounding with the top 1% earners in India capturing less than 21% of the total income in the 1930s, but this was drastically reduced to 6% in the early 1980s and then rose to 22% during the liberalisation era.

- It led to an **increasingly divergent trend in per capita income** across states.
- **Political Centralization:** The **asymmetric federalism** inherent to the Constitution was only accelerated and mutually reinforced with political centralization since 2014, making the Union Government extractive rather than enabling.
 - It led to states losing their capacity to generate revenue by surrendering their rights in the wake of the GST regime.
- **Post-Pandemic Fiscal Policies:** In the post-pandemic world, there is a need to rethink existing principles that guide the country's fiscal policy, including debt, which is expected to remain high.
- **North-South Divide in India:** It has been a topic of intense discussion, especially in the context of fiscal federalism.
 - The southern states of India have often expressed concerns about the alleged unfair devolution of tax money, claiming they were deprived of their legitimate share from central taxes.
 - States such as Karnataka, Kerala, Tamil Nadu, and West Bengal have also complained and protested against the alleged denial of their dues under central schemes, flagged the Centre's tight control on their borrowing limits and lack of adequate support in times of disasters.

Strengthening Fiscal Federalism

- Strengthening fiscal federalism in India is a complex task that involves multiple aspects. It is crucial for addressing these concerns and fostering cooperation and accommodation between the North and South.

- **Cooperative Federalism:** NITI Aayog has been constituted to actualize the important goal of cooperative federalism and to enable good governance in India. It acts as the quintessential platform for the Government of India by bringing States together as 'Team India' to work towards the national development agenda.
 - A number of steps have been taken by NITI Aayog to foster cooperative federalism through structured support initiatives and engagement with the States/UTs on a continuous basis.
- **16th Finance Commission:** It, headed by Arvind Panagariya, has been given more freedom to determine the scope of its recommendations, providing it more room to strengthen fiscal federalism.
 - Its job is to ensure balance in resource transfers between the Centre and states, and among states.
 - However, states grudgingly relinquish their resource-raising capacity and resent any loss of agency over expenditure.
- **Addressing Inequities:** The concerns of the founding fathers — addressing socio-economic inequities — are being forgotten in today's fiscal policy.
 - The original intention of addressing inequities was turned on its head as it metamorphosed into one of the world's most regressive taxation systems due to a centralised fiscal policy.
 - India's intergovernmental transfer system should be decidedly more equity-oriented.
- **Granting State Governments, the Powers to Levy Income Taxes:** One tangible solution to restore the balance in fiscal federalism is to grant State governments the powers to levy income taxes.

- **New Fiscal Federal Architecture:** India will be able to truly actualize the 'grand bargain' and see the GST as an enduring glue holding the four pillars together by creating the new fiscal federal architecture and strengthening India's unique cooperative federalism.
- **Future Directions**
- The future of fiscal federalism in India likely to involve further reforms to address these challenges and imbalances that includes making the **intergovernmental transfer system** more **equity-oriented**, addressing the resource asymmetry between the Centre and the States, and **managing growing regional tensions**.
- Fiscal federalism in India has faced numerous challenges, including the transition from a planned economy to a market-based system, globalisation, and the changing political environment. The system had to be reoriented to create a competitive environment. There has been dissatisfaction due to the highly centralised system, impediments to a common market, and regional aspirations for statehood.

19. Hybrid vs Electric Vehicles and government subsidies

The Union government has been attempting to fast track decarbonizing transport for almost a decade with the introduction of the Faster Adoption and Manufacture of Hybrid and Electric Vehicles, or FAME in 2015. The third iteration of this policy is likely to be announced in this year's Union Budget. FAME attempts to generate demand for electric vehicles (EVs) and hybrids by subsidizing retail sales, encouraging the manufacture of components and creating and nurturing an EV ecosystem nationwide. But the policy has changed from when it was introduced, with a steady removal of subsidies for hybrids.

FAME Policy and its Evolution

- India's road transport sector contributes approximately 12% to the country's CO₂ emissions, making it the third largest greenhouse gas emitting sector after energy and agriculture, according to the International Energy Agency. To address this, the Union government has been striving to decarbonize transport for almost a decade, starting with the Faster Adoption and Manufacture of Hybrid and Electric Vehicles (FAME) policy in 2015.
- The FAME policy aims to generate demand for electric vehicles (EVs) and hybrids by subsidizing retail sales, encouraging the manufacture of components, and creating an EV ecosystem nationwide. However, since its inception, the policy has shifted, with a steady reduction in subsidies for hybrids. In 2017, the government withdrew subsidy support for "mild hybrids," affecting popular car models that previously took advantage of about 65% of the subsidy component.
- This shift has sparked debate, with some supporting the move and others highlighting challenges such as the lack of charging infrastructure, dependence on imported battery components, and a grid still dominated by coal-based power, which increases the overall carbon footprint of EVs. It has been viewed from different perspectives.

Specifications	Hybrid Cars	Electric Cars
1. Power/Fuel Source	Electricity and Fossil Fuel (Petrol and Diesel)	Electricity Through Battery Pack (DC)
2. Engine	Internal Combustion Engine (ICE) and Electric Motor(s)	Electric Motor(s)
3. Fuel Efficiency	Combination of ICE and Battery Range	Depends on Battery Range
4. Emission Levels	Higher Compared to Electric Cars	Lower Compared to ICE and Hybrid Cars
5. Cost	Similar to Conventional ICE Cars	High
6. Charging	Not Needed	Needed

Perspectives on the Decision

- **Focus on Maximizing Value of Incentives**

- One perspective notes that 90% of emissions in transport come from road transport, with passenger cars contributing 20% of this. Two-wheelers and three-wheelers, which constitute 75% and 4% of vehicle sales respectively, have seen significant success in the EV transition. However, commercial vehicles, despite being only 5% of the vehicle population, contribute 34% of emissions.
- This segment, along with the relatively small portion of passenger cars that are hybrids, does not justify the need for extensive subsidies, especially for luxury hybrid models costing around ₹30 lakh. The focus should be on maximizing the value of incentives to transition towards an emissions-free, energy-efficient India.

- **No Favor to Technologies Through Subsidies**

- Another perspective raises concerns about the idea of zero-emission vehicles, given that more than 75% of India's electricity is produced from coal. It is argued that when evaluating ICE vehicles, hybrids, and EVs, it's essential to consider life cycle emissions and the total cost of ownership (TCO).

- Research suggests that hybrids often have lower emissions and TCO compared to EVs, which can be more polluting than ICE vehicles due to the coal-dominated grid and the need for materials like cobalt, nickel, and lithium for batteries. It is advocated that the government should set life cycle emission and GHG norms without favoring specific technologies through subsidies.

Balancing Subsidies and Transition Strategies for Hybrids and EVs

- **Equal Footing for Hybrids in Subsidies?** : As the government frames FAME 3, the question arises whether hybrids should be treated equally to EVs in terms of subsidies. **One argument** is that hybrids should be on equal footing with EVs, with no discrimination, as hybrids offer a balanced approach with lower emissions and costs in the current energy context. **Another argument** is that policies must evolve with the sectoral landscape, aiming for zero-emission vehicles to achieve climate and energy security goals.
- **Transitioning with a Greener Grid** : Despite the current reliance on coal, India is rapidly deploying renewables and aims to generate half of its power from non-fossil sources by 2030. It is emphasized that the transport and energy sectors need to transition simultaneously, with policies supporting this overlap. EVs are inherently more efficient in energy usage compared to ICE vehicles, making them a crucial part of the long-term strategy for decarbonization.

Road ahead

- **Electric Vehicles (EVs):**
 - **Strong Growth Potential:** EVs are widely seen as the long-term solution for sustainable transportation due to zero tailpipe emissions. Government regulations and incentives are pushing for increased EV adoption. Battery technology advancements are expected to bring down prices and increase range, making them more accessible.
- **Hybrids:**

- **Continued Relevance:** Hybrids, particularly plug-in hybrids (PHEVs) with larger batteries, offer a middle ground. They provide some electric driving for short commutes and gasoline backup for longer trips, appealing to those with range anxiety or limited access to charging infrastructure.
- **Factors Influencing the Mix:**
 - **Charging Infrastructure:** The development of a robust and convenient charging network is crucial for widespread EV adoption.
 - **Battery Technology:** Advancements in battery technology will determine the affordability and range of EVs, impacting their competitiveness with hybrids.
 - **Government Policy:** Government regulations and incentives will significantly influence the balance between hybrids and EVs. Stringent emission standards could favor EVs, while subsidies for both technologies could keep hybrids in the game.
- **Possible Scenarios:**
 - **EV Dominance:** With rapid advancements in battery technology and charging infrastructure, EVs could become the dominant choice in the future. Hybrids might become a niche market for specific needs.
 - **Co-existence:** A more likely scenario is the co-existence of both technologies. EVs might be preferred for daily commutes, while hybrids cater to those with range anxiety or limited access to charging.
- The debate on whether EVs and hybrids should receive equal government subsidies is complex, involving considerations of emissions, energy efficiency, cost, and the evolving energy landscape. Ultimately, the way forward will depend on technological advancements, government policies, and consumer preferences. Both hybrids and EVs are likely to play a role in the future of transportation, with the balance shifting over time. As India strives towards decarbonizing its transport sector, it must balance immediate needs with long-term sustainability goals.

20. ABC of Tamil Nadu hooch tragedy

In Tamil Nadu's Kallakurichi, at least 34 people have died and around 100 others are in the hospital after drinking spurious liquor, also known as hooch. It's possible that more people have died than reported, as some may have passed away before reaching medical help.

The Science of Creating Alcohol:

- Alcohol is produced using two basic processes: **fermentation and distillation**.
- **Fermentation** is a chemical reaction where yeast or bacteria react with the sugars (from grain, fruits, sugarcane, etc.) to produce **ethanol** (the alcohol in the drink).
 - **Liquor is differentiated by its alcohol content** from the 5% by volume (beer) to the 12% (wine) to the 40% (distilled spirits).
 - Distillation is important because with more of the sugar getting converted to alcohol, **the conditions become toxic**.
- **Distillation** is the process of physically separating the alcohol from the rest of the mixture using evaporation and condensation.
- **Adverse effect of Ethanol on Human Health:**
- Ethanol (C_2H_5OH) is **metabolised in the liver and the stomach** by alcohol dehydrogenase (ADH) enzymes to acetaldehyde.
- Then aldehyde dehydrogenase (ALDH) enzymes transform the **acetaldehyde** into acetate.
- The adverse effects of alcohol consumption, from the **hangover to cancer**, are due to acetaldehyde.
- Contrary to popular belief, the **World Health Organization** (WHO) has found that “no level of alcohol consumption is safe for health”.

Hooch/Spurious Liquor

Hooch is a commonly used term for poor quality alcohol, derived from Hoochinoo, a native Alaskan tribe that was known to produce very strong liquor.

Unlike branded liquor which is produced in factories with sophisticated equipment and rigorous quality control, **hooch is made in more crude settings** (in many cases homemade) without any quality checks.

- **Process**

- Like all alcohol, hooch is produced using two basic processes: fermentation and distillation.
- Hooch is produced using distillation of a fermented mixture, generally of locally available yeast, and sugar or fruit (often fruit waste).
 - The fermented mixture which is to be distilled contains **more than just consumable alcohol (ethanol)**.
 - It also contains **methanol** (CH₃OH), a different form of alcohol which is highly toxic for human beings.
 - During the distillation, both ethanol (boiling point of 78.37 °C) and methanol (boiling point of 64.7 °C) are concentrated.
 - Thus, if done incorrectly, distillation can lead to an end product which contains high quantities of toxic methanol.
- The end product can have a **high concentration of methanol** (instead of harmless trace amounts), which is poisonous and can also cause **cerebral edema (swelling of the brain), haemorrhage, and death**.
- Importantly, **it is near impossible to tell** whether hooch is safe to consume before actual consumption.

Regulation of Methanol in India:

- Schedule I of the Manufacture, Storage and Import of **Hazardous Chemical Rules 1989** includes methanol.
- **The Food Safety and Standards (Alcoholic Beverages) Regulations 2018** stipulate the maximum permissible quantity of methanol in different liquors.
 - **For example**, these values span a wide range including “absent” in coconut fenny, 50 grams per 100 litres in country liquor, etc.
- **The Indian Standard (IS 517)** applies to how the quality of methanol is to be ascertained, and together with the Tamil Nadu Denatured Spirit, Methyl Alcohol, and Varnish (French Polish) Rules 1959, what signage, methanol packaging should carry



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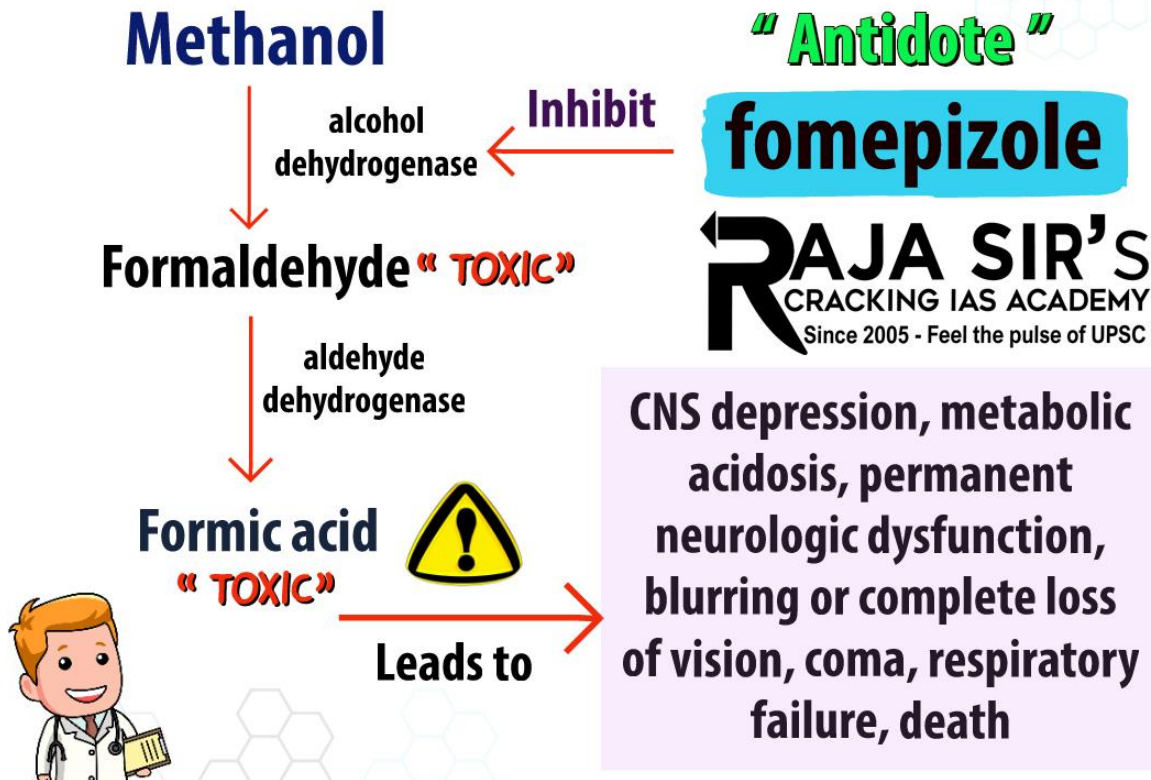
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Methanol Poisoning

- The deadliness of spurious liquor arises from methanol.
- The human body contains infinitesimal quantities of methanol (4.5 ppm in the breath of healthy individuals, per a 2006 study) as a result of eating some fruits. But even for an adult, more than 0.1 ml of pure methanol per kilogram of body-weight can be devastating.
- Once ingested, ADH enzymes metabolise methanol in the liver to form formaldehyde (H-CHO). Then ALDH enzymes convert formaldehyde to formic acid (HCOOH). The accumulation of formic acid over time leads to a condition called metabolic acidosis, which can lead to acidaemia: when the blood's pH drops below its normal value of 7.35, becoming increasingly acidic.
- The blood's pH is normally maintained by a balance between an acid, like carbon dioxide (CO₂), and a base, like the bicarbonate ion (HCO₃⁻). The 'metabolic' in 'metabolic acidosis' means the concentration of the bicarbonate ion is dropping, leading to the acid gaining the upper hand.
- Formic acid also interferes with an enzyme called cytochrome oxidase, disrupting cells' ability to use oxygen and leading to the build-up of lactic acid and contributing to acidosis.
- According to a paper published by the journal *Archives of Toxicology* in January 2022, consuming methanol also leads to "methanol-induced optic neuropathy ..., a serious condition that may result in long-term or irreversible visual impairment or even blindness [due to] damage and loss of function of the optic nerve and retina".

- This consequence “shows a tendency to occur as mass poisonings around the world with a clear predilection for poor societies in developing countries,” it added.
- Methanol-poisoning can also cause cerebral edema, haemorrhage, and death.

Methanol poisoning & Antidote



Treating Methanol Poisoning

- Once methanol is ingested, the body takes some time to completely eliminate it. There are **two immediate ways** to treat methanol poisoning.
- **One is to administer ethanol** (of a pharmaceutical grade, by healthcare workers). Ethanol competes with methanol for the ADH enzymes. As a result, the methanol is kept from being metabolised to formaldehyde.
- **The other option is to administer an antidote called fomepizole**, which slows the action of the ADH enzymes, causing the body to produce formaldehyde at a rate that the body can quickly excrete, preventing the deadlier effects from kicking in.

Issues involved

- **Inadequate Law Enforcement and Prohibition Measures:** The Prohibition Enforcement Wing of the Tamil Nadu police is tasked with preventing the production and sale of illicit liquor. However, the recurrence of hooch tragedies, including the recent one in Kallakurichi and previous incidents in Marakkanam and Madhuranthakam, indicates a failure in effectively curbing the illegal trade of methanol-laced moonshine. Despite existing laws and amendments to control methanol supply, enforcement has been lax, allowing the illicit brewing industry to thrive.
- **Economic Factors Driving Consumption of Illicit Liquor:** The high cost of alcohol sold through the Tamil Nadu State Marketing Corporation Limited (TASMAC) outlets and irregular incomes of daily wage workers have driven many to seek cheaper alternatives. The aggressive price hikes in TASMAC shops have made legal alcohol unaffordable for many, pushing them towards dangerous, low-cost moonshine. This economic pressure is a significant factor contributing to the consumption of illicit liquor.
- **Public Health Awareness and Education:** There is a critical need for increased public health awareness regarding the dangers of consuming illicit liquor. Methanol, often added to moonshine to increase its potency, is a potent poison

that can cause severe health issues, including liver failure, blindness, and death. The government needs to implement robust public health campaigns to educate the population about these risks and discourage the consumption of illicit alcohol.

- **Regulatory and Policy Gaps:** The Tamil Nadu Prohibition Act, 1937, and subsequent amendments were designed to control the manufacture, sale, and consumption of intoxicating substances. However, the persistent issue of methanol poisoning suggests gaps in the regulatory framework and its implementation. The government needs to review and strengthen these regulations to prevent the diversion of industrial methanol to the illicit liquor market.
- **Post-Tragedy Response and Accountability:** The state government's response to the tragedy, including announcing financial compensation for the victims' families and initiating a CB-CID investigation, is reactive rather than preventive. While these measures provide some relief, they do not address the root causes of the problem. There is a need for proactive measures to shut down the illicit brewing industry and hold accountable those responsible for the illegal production and distribution of methanol-laced liquor.

Road ahead

- **Strengthening Regulatory Framework and Enforcement:** Article 47 of the Indian Constitution directs the state to prohibit intoxicating drinks and drugs harmful to health. Seventh Schedule (Article 246) empowers states to legislate on alcohol, making it a state subject. Parthasarathy Committee Report (1992) recommended stringent laws to prevent the illegal possession and storage of methanol, including adding a bitter substance to make it undrinkable. The judiciary has often emphasized the need for strict enforcement of prohibition laws to prevent illicit liquor tragedies.
- **Public Health Awareness and Education Campaigns:** Initiate public education campaigns through advertisements, street plays, and community involvement to raise awareness about the dangers of consuming illicit liquor. Similar to the

botulism prevention strategies in prisons, use handouts, fliers, and local media to educate the public about the risks of methanol-laced alcohol. Maharashtra has conducted public awareness campaigns to educate people about the dangers of illicit liquor and the importance of consuming only legally available alcohol.

- **Economic Interventions and Subsidies:** Provide low-cost legal alcohol through state-run outlets like TASMAC to reduce the demand for cheaper, illicit alternatives. Implement economic interventions such as job creation and subsidies for legal alcohol to lessen the financial burden on daily wage earners. Tamil Nadu (2002) introduced low-cost liquor through TASMAC, which helped control deaths due to hooch by providing an affordable legal alternative.
- **Community Involvement and Vigilance:** Form community-based vigilance committees to monitor and report illicit brewing activities. Engage local leaders and women's groups in these efforts. Empower women-led community initiatives to combat the sale and consumption of illegal liquor, as they are often the most affected by alcohol-related issues. Despite challenges, Bihar's prohibition policy has seen some success through community involvement and women's groups advocating for the ban.
- **Judicial and Administrative Reforms:** Conduct thorough judicial inquiries into hooch tragedies and hold officials accountable for lapses in enforcement. Implement recommendations from such inquiries to prevent future incidents. Adopt a zero-tolerance policy towards illicit liquor trade, with strict penalties for those involved, including law enforcement officials found complicit. Despite being a dry state, Gujarat has implemented strict penalties, including the death penalty for those responsible for deaths due to toxic alcohol.
- While the state government has taken post-facto measures, including disciplinary actions and financial compensation, these efforts are insufficient and overdue. The government must urgently dismantle the illicit brewing industry and enforce stringent controls on methanol supply. Additionally, increasing public health

awareness about the dangers of consuming hooch is imperative to prevent future tragedies.

21. INDIA & G7

Recently, Italy hosted the **50th G7 Summit** in **Apulia** from June 13 to 15, 2024. The high-level convening came against several global concerns, including the ongoing **conflict in Gaza**, the **war in Ukraine**, **climate disasters**, and other emerging challenges. Thus, the G7 summit in Apulia represented a pivotal opportunity for the world's foremost democracies to discuss pressing global challenges collectively. The Indian Prime Minister, Narendra Modi, also participated in the G7 summit. **India** was invited as an **Outreach Country**.

Participants:

- **G-7 Members:** U.S., Canada, Germany, France, Japan, U.K., Italy
- **Special Invitees:** India, Algeria, Argentina, Brazil, Jordan, Kenya, Mauritania, Tunisia, Türkiye, UAE
- **Organizations:** African Development Bank, IMF, OECD, UN, World Bank
- **Upcoming Summit:** Scheduled for 2025 in Canada's Alberta region, with potential changes in membership and leadership.

What is the G-7 Group?

- G-7 is a group of the most developed and advanced economies of the world. The members of the G7 group are **France, Germany, Italy, the United Kingdom, Japan, the United States, and Canada**. Summits are held annually and hosted on a rotation basis by the group's members.

Origin

- The G7 originated from the **Oil crisis of 1973** and the resulting financial crisis, which forced the leaders of 6 major industrial nations to convene a meeting in **1975**.
- The participating countries were the **US, UK, France, West Germany, Japan, and Italy**.
- Canada joined in **1976**, leading to the formation of the G7.
- It was known as **the 'G8' for** several years after the original seven were joined by **Russia in 1997**, but it was renamed as G7 after Russia was expelled as a member in 2014 following its **annexation of the Crimea region of Ukraine**.

Origin story

A short history of the grouping on the G7 Germany website says the first **“World Economic Summit”**, which later became the G7, was launched in **1975 by former French President Valéry Giscard d’Estaing** and then Federal Chancellor Helmut Schmidt.

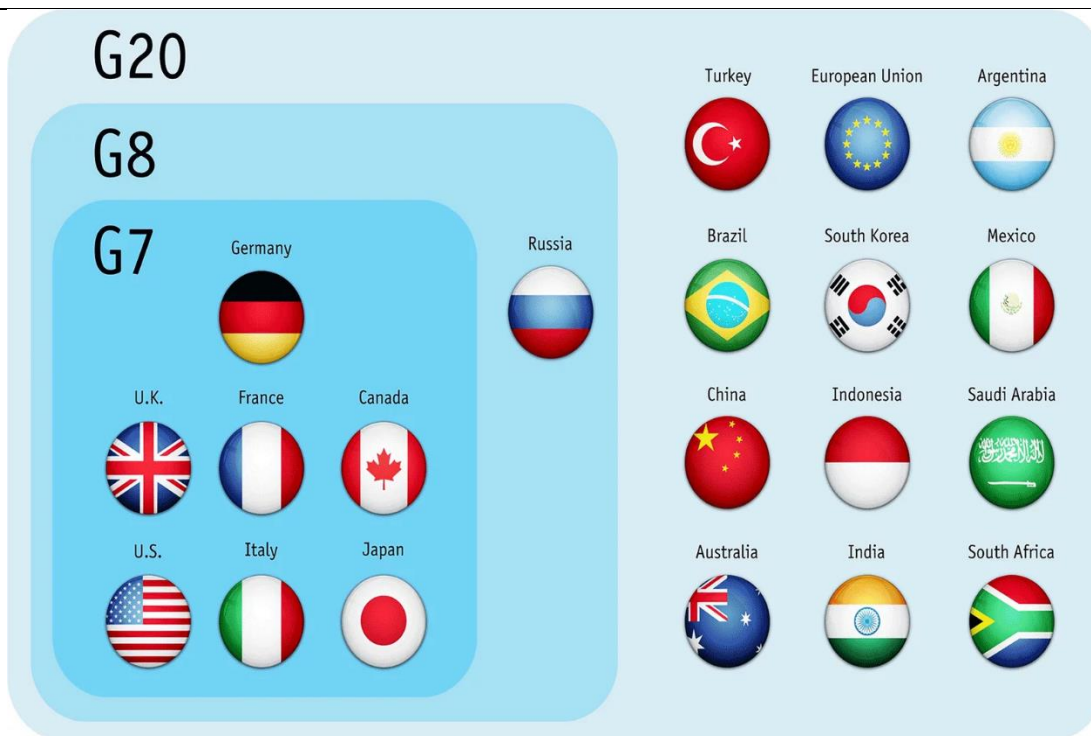
The heads of state and government of **Germany, France, Great Britain, Italy, Japan and the US — a Group of Six** — met for a fireside chat at Rambouillet Castle in France.

The participants exchanged ideas on the economic problems of the 1970s — **the first oil crisis** and the collapse of the system of fixed exchange rates (Bretton Woods) — and agreed on international economic policy and initial measures to fight the global downturn.

In 1976, Canada was added to the group, and the **first G7 met in Puerto Rico**. The first talks between the then **European Community and the G7** took place in **London in 1977**, and since the **Ottawa Summit of 1981, the European Community (now European Union)** has been part of **all working sessions**.

In the 1980s, the interest of the G7 expanded to include foreign and security policy issues. Then Soviet General Secretary Mikhail Gorbachev was invited to talks on the sidelines of the **London Summit in 1991**. In 1998, at the

Birmingham Summit, the Group of Eight was constituted as Russia became a member. Russia's membership was suspended in 2014 following its annexation of Crimea.



Nature of Grouping

- **Informal Grouping:** The G7 is an informal grouping that operates outside of formal treaties and lacks a permanent bureaucracy. Each member nation takes turns leading the discussions (presiding nation).
- **Decision Through Consensus:** Despite the absence of legal enforcement, the G7's power stems from its members' economic and political clout. When these major powers can agree on a course of action, it can significantly impact global issues.

- **Limited Legislative Power:** The G7 **cannot** enact laws directly. However, their pronouncements and coordinated efforts can influence international policies and shape global agendas.

The Oil Crisis of 1973-74

It refers to a period of sudden surge in oil prices, accompanied by a decrease in supply which has destabilised the global economy since oil is a major source of energy for many countries.

Trigger:

Yom Kippur War (October 1973): Egypt and Syria launched a surprise attack on Israel. The United States intervened by resupplying the Israeli military during the conflict.

OPEC's Political Leverage: The Organization of the Petroleum Exporting Countries (OPEC), consisting of major oil-producing nations, decided to use oil as a political weapon in response.

OPEC's Actions:

Oil Embargo: OPEC, particularly its Arab members, imposed an oil embargo on countries that supported Israel, including the United States and some European nations.

Production Cuts: OPEC also reduced overall oil production, further tightening the supply.

Impact:

Supply Shortage: The embargo and production cuts led to a global oil shortage. Long lines formed at gas stations in many countries, and rationing became necessary.

Price Hike: With reduced oil availability, prices heavily increased (from USD 3 to USD 11).

Economic Downturn: Higher oil prices had a cascading effect. Transportation costs increased, raising the prices of goods and services. This fueled inflation and economic stagnation in many countries.

Significance of India for G7

Key Global South member

- India has been a significant part of the G-7 process for years, gaining attention in the 2000s for its steady growth during the global financial crisis.
- Though not a G-7 member, India is a key Global South member and has hosted the "Voice of Global South" conference since 2023.
- It is also part of the G-20 troika with Brazil and South Africa.

Economic Growth and Stability

- India gained attention from the G7 in the 2000s due to its steady economic growth during the global financial crisis, demonstrating its resilience and potential as a major economy.

Strategic Partnerships

- India is part of the G-20 troika, along with Brazil and South Africa, which adds to its strategic importance in global economic and political discussions.

Regional Stability and Development

- India's involvement in the G7's outreach efforts can contribute to regional stability and development, particularly through investments and cooperation in areas like clean energy, trade, and economic development.

Geopolitical Balance

- India's participation helps balance global geopolitical dynamics, especially in the context of rising concerns about China's influence and trade practices.
- India's strategic position and partnerships are crucial for maintaining global stability.
- India's growing strategic Importance in the Indo-Pacific- India has emerged as a major strategic partner for the Western G-7 countries. This has helped in containing China's expanding influence, particularly in the Indian Ocean.
- India's Role in Addressing the European Energy Crisis- India's ability to secure discounted Russian oil and supply refined fuels to Europe has made it an important player in addressing the European energy crisis.
- India's Potential for Mediating the Russia-Ukraine Conflict- India's long-standing relationships with both Russia and the West makes it a potential mediator in the Russia-Ukraine Conflict.
- Regulation of AI- India has been an active participant in the debate on the global regulation of AI. With the focus of G-7 countries on the regulation of Artificial Intelligence, India's association with G-7 countries can help in the development of a common global framework for AI.

Significance of G7 for India

Crucial platform to highlight achievements and perspectives

- For India, the G-7 outreach session is a crucial platform to highlight its achievements and perspectives.

- During the session, PM Modi emphasized the importance of Indian elections, technology, artificial intelligence, and addressing climate change.

Economic Significance

- As per one estimate (2018), the G7 nations account for close to 60 percent of global net wealth (\$317 trillion).
- 30 percent of global gross domestic product, and about 770 million people or 10 percent of the world's population.

Political Significance

- Political heavyweights are capable of shaping the response of Multilateral challenges.
- In 1999, it created the Financial Stability Forum in order to manage the international monetary system
- 47th summit in June 2021 had focused on the recovery from ongoing COVID-19 pandemic. It promised to distribute 1 billion vaccines to poorer countries.
- Its theme was Global Action to Build Back Better.

Developmental Significance

- G-7 provided \$300 million in 1997 to help build the containment of the reactor meltdown at Chernobyl.
- G7 played crucial role in setting up a global fund to fight malaria and Aids in 2002.
- In October 2020, G7 finance ministers backed an extension of a G20 bilateral debt relief initiative for the world's poorest countries

Advocacy for the Global South

- India uses the G7 platform to advocate for the concerns of the Global South, such as economic inequality, climate change, and resource security.
- This advocacy helps ensure that the voices of developing nations are heard in global decision-making processes.

Technological and Climate Initiatives

- India's participation in G7 discussions on technology and climate change allows it to contribute to and benefit from global initiatives aimed at addressing these critical issues.
- It also provides an opportunity for India to share its innovations and approaches.

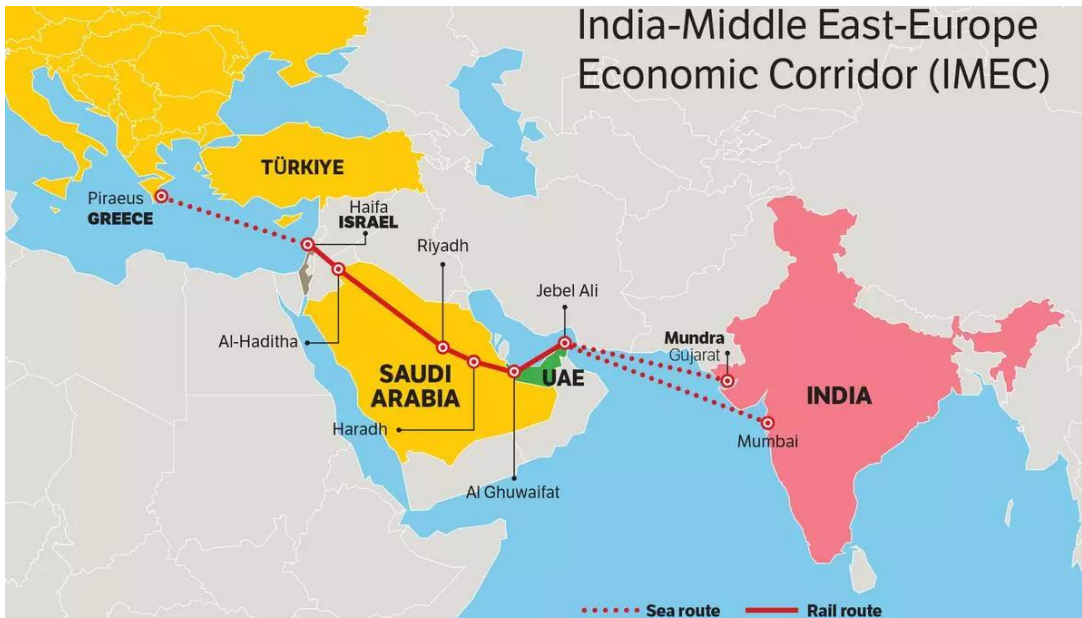
Showcasing Democratic Values

- By participating in the G7, India reinforces its commitment to democratic values and principles, aligning itself with other major democracies and highlighting the importance of democratic governance on the global stage.

Some Key Outcomes of G-7 Group Summit

1. **Promotion of G7 PGII (Partnership for Global Infrastructure and Investment)** - Under this PGII, G7 will mobilise USD 600 billion by 2027 to deliver infrastructure projects to developing and middle-income countries.
2. **Support and Promotion to India-Middle East-Europe Economic Corridor (IMEC)** – G-7 nations committed to promoting the IMEC. It also forms part of the PGII initiative.
3. **Support to Infrastructure Projects**- G7 also extended support for the Lobito Corridor in Central Africa and **Luzon Corridor** and the Middle Corridor.
4. **Enhancing Interoperability of AI Governance**- G7 countries aim to enhance interoperability amongst their AI governance approaches to promote greater certainty, transparency and accountability.

5. **Extraordinary Revenue Acceleration (ERA) Loans for Ukraine-** The G7 countries agreed to provide financing of approximately USD 50 billion in additional funding to Ukraine by the end of 2024.



Challenges faced by G-7 Group:

- **G7 is not representative in current times-** In the initial years, it accounted for **2/3rd of global GDP**. However, the G-7 group now accounts only for **1/3rd on PPP basis** and less than 50% on nominal basis (market prices).
The **emerging 7 (E7) economies of India, China, Indonesia, Brazil, Mexico, Russia, Turkey** are not part of it.
- **Failure in tackling Global issues-** G7 failed in **tackling global issues** and challenges of Climate change, terrorism, West Asian crisis, COVID 19 pandemic.

- **Historical Polluters-** G-7 accounts for **59% of historical CO2 emissions** and pledged phase out fossil fuels. There has been no visible progress of the same and they currently account for twice the CO2 emission than African continent.
- **Trade Conflicts-** Trade disputes among G7 members and with other countries disrupt global economic stability. **Weakening of rules based of trade regime through WTO and trade wars has active role of G7 countries.**
- **Populism and Nationalism-** The rise of populist and nationalist movements within G7 countries challenge multilateral cooperation and the G-7 group's commitment to globalism and liberal democratic values.

Challenges with India's further deepening of engagement with G-7 Countries

- **Escalating conflict in Europe-** With the escalation of conflict in Europe, India finds it hard to duck its consequences. This is reflected in the choice of Indian PM to stay away from the Ukraine peace conference in Switzerland that took place after the G7 summit.
- **Defence Dependence on Russia-** India's reliance on Russia for over 60% of its military equipment creates a complex situation. A strained West-Russia relationship could disrupt supply chains and force India to diversify its defence partnerships.
- **Economic Interdependence-** Deep economic ties with both the US and China makes it difficult for India to balance its trade relations with both these countries.
- **Geopolitical Rivalry-** The intensified competition between the US and China in the Indian Ocean region forces India to take sides on issues that don't directly align with its national interests.
- **Non Inclusion of India as a permanent member-** G-7 has an obsolete membership structure which does not include the emerging economies like India.

Way Forward

- India's evolving relationship with the G7 signifies its growing importance in global economic and strategic affairs. The synergies between India and G7 nations, driven by shared values and mutual interests, present vast opportunities for collaborative growth. As India continues to rise on the global stage, its partnership with the G7 will play a pivotal role in shaping a balanced and inclusive world order. Following should be the way forward-
- **Deepening Economic Ties**- Encouraging investment in sectors like renewable energy, technology, infrastructure and enhancing trade liberalization efforts can bolster economic relations between India and G-7 group.
- **Strategic Collaborations**- Strengthening defense cooperation through joint exercises, intelligence sharing, and technology transfers can address common security challenges.
- **Multilateral Engagement**- India's active participation in G7 forums can contribute to shaping inclusive global governance frameworks. Joint efforts in climate action, focusing on sustainable development and green technologies, can set benchmarks for global environmental policies.
- **Technological Innovation**- Collaborative efforts in digital infrastructure development, cybersecurity, and artificial intelligence can drive the next wave of technological advancements. Joint research initiatives in fields like biotechnology, space exploration, and renewable energy can foster innovation.

22.Representation and Forest Conservation: Evidence from India's Scheduled Areas

- Recently, A Paper published in the American Political Science Review titled '**Representation and Forest Conservation: Evidence from India's Scheduled Areas**'.

- The authors adopt what they call a **“difference-in-differences’ framework** that enables to isolate the **causal effect of ST-mandated representation** on forest outcomes
- The paper offers comparable data sets of local self-governance and forest cover that differ in geography and over time:
- For villages with **local self-government in Scheduled Areas** (with mandated ST representation)
- For villages with local self-government without mandated ST representation
- Villages which adopted PESA earlier, and those that did so later.
- Findings were based on “remote-sensing microdata that have recently become available from satellites Such as **LANDSAT, Sentinel**, and Defense Meteorological Satellite Program (DMSP).”
- They use two such datasets measures **Vegetation Continuous Fields (VCF) & Global Forest Cover (GFC)** dataset for 2001-17

- **Highlights From The Report – Institutional Mechanism That Can Yield Better Results In Conservation**
- Political Representation For Marginalized Communities – STs Impact On Forest Conservation:
- Increase in Tree Canopy: Boosting formal representation for ST led to an average **increase in tree canopy by 3% per year** as well as a reduction in the rate of deforestation.
- Prior to PESA: Areas close to mines experienced higher rates of deforestation.
- Post PESA Impact: Rise in tree canopy and fall in deforestation began to happen after the introduction of **PESA elections that mandate quotas for ST.**

- Mere presence of PRIs or local self-government (introduced from 1993) without mandated representation for the ST, had no conservation effects.
- *Reason for this Cause:* When empowered as political actors, the **STs had an economic incentive to protect trees**, which they needed for their livelihoods centred on sale of **non-timber forest produce** and daily caloric intake.
- This dependency made them hostile to commercial timber and mining which lead to deforestation.
- Vesting powers in a single umbrella institution – Political institution that empowers marginalised voices
- *Benefits of Single umbrella institution:* It would be better at recognising how to balance the dual policy objectives of development and conservation.
- It can consolidate power into a more substantive and meaningful democratic authority.

What Are Scheduled Areas?

Schedule areas are defined under **Article 244 (1)** , **“Scheduled Areas” as such areas as the President may by order declare to be Scheduled Areas after consultation with the Governor of that State.**

Scheduled areas are identified by the **Fifth Schedule** of the Constitution of India. Scheduled Areas are found in **10 States of India** which have a predominant population of tribal communities.

Fifth And Sixth Schedules

Fifth Schedule: The provision of the Fifth Schedule shall apply to the administration and control of the Scheduled Areas and Schedule Tribes in any State (other than the states of Assam, Meghalaya, Tripura, and Mizoram).

Sixth Schedule: The provisions of the Sixth Schedule shall apply to the administration of the tribal areas in the State of **Assam, Meghalaya, Tripura, and Mizoram.**

Administrative Decentralisation vs Democratic Decentralisation:

- Administrative decentralisation - Here the priority is **efficient execution**
- It is possible to have village-level governing councils empowered with budgets for execution but lacking discretionary power on resource management.
- Democratic decentralisation: Refers to **representative and downwardly accountable local actors** who have autonomous, discretionary decision-making spheres, with the power and resources to make significant decisions pertaining to people's lives.

Background of PESA

- Need For Local Self-Governance: The **73rd constitutional amendment** was made in **1992** to promote local self-governance in rural India.
- 73rd constitutional amendment formalized local self-government through the three-tier Panchayati Raj Institutions (PRI) in the **non-Scheduled Areas**
- But It did so without **“mandated representation for STs”**
- PESA took it a step further and It introduced an **electoral quota** that requires all chairperson positions, as well as **at least half the seats on each local government councils to be reserved for ST individuals.**

Bhuria Committee:

- The government appointed a committee headed by **Mr. Dileep Singh Bhuria** to work out the details as to how structures similar to Panchayati Raj Institutions can take shape in **Tribal Areas and Scheduled Areas** and define their powers.
- The Bhuria Committee submitted its report in **January 1995.**

- **Panchayat (Extension to Scheduled Areas) Act, 1996 (PESA)**
- *Enacted On:* PESA was enacted on 24 December 1996 to extend the provisions of **Part 9 of the Constitution to Schedule Areas**, with certain exceptions and modifications.
- *Self-Governance Through Gram Sabha:* The PESA Act was enacted to ensure self-governance through Gram Sabhas (village assemblies) for people living in the Scheduled Areas.
- *Rights of Tribal Communities:* The PESA Act recognizes the **rights of tribal communities** that are residents of tribal communities and also acknowledges their traditional rights over natural resources.
- *States Under the Act:* **Ten** states have notified **Fifth Schedule areas** that cover (partially or fully) several districts in each of these states.
- These states are **Andhra Pradesh, Chhattisgarh, Gujarat, Himachal Pradesh, Jharkhand, Madhya Pradesh, Maharashtra, Odisha, Rajasthan, and Telangana.**

Significance of The PESA Act

- *Empowered Gram Sabhas:* They play a key role in approving development plans and controlling all major developments in the social sectors.
- *Tribal Integration:* Decentralised governance helps reduce tribal people's grievances and builds trust in integration with the mainstream.
- *Protect Ecosystem:* PESA empowers tribes through Gram Sabhas to preserve their connection with the ecosystem.
- For example, in 2013, the Supreme Court of India ordered the Odisha Government to seek gram sabha permission for **bauxite mining in Kalahandi and Rayagada district** of Odisha, leading to the *cancellation of mining on Niyamgiri hills.*

- *Safeguard tribal interests and rights:* The control over institutions and functionaries help in protecting their traditional culture, religion and identity as well as the rights provided by the Constitution.

Limitations Of The PESA Act

- *States Not Even Framed the Rules:* Chhattisgarh, Jharkhand, Madhya Pradesh, and Odisha have not even framed the rules yet.
- *Use of unfair means for bypassing the law:* Acquisition of land happens under other acts, violating the spirit behind PESA, i.e. safeguard tribal land and consent of gram sabhas.
- In the Korba district of Chhattisgarh, the authorities decided to acquire land using the **Coal Bearing Act of 1957**.
- *Poor Implementation of law:* A 2010 study on “Status of PESA” in Andhra Pradesh, Gujarat, Chhattisgarh, Jharkhand, and Orissa by Indian Institute of Public Administration highlighted **poor implementation of the Act**.
- E.g., In Khunti district of Jharkhand, *65% of people whose land was acquired were not even asked about it.*
- Lack of Clarity, **Legal infirmity, bureaucratic apathy** and **lack of political will** are some of the concerns.
- **Way Forward To The PESA Act**
- **Implement Municipal Extension to Scheduled Areas (MESA)** as per the Bhuria Committee recommendations.
- *Capacity Building:* Equipping Gram Sabhas with **training and resources, adequate responsibilities to levy and collect taxes, fees, duties, or tolls.**
- *New Tribal Development Community Model:* for tribal development.

- *Convergence of PESA with other regulations:* Like **Forests Rights Act (2006), Right to Fair Compensation and Transparency in Land Acquisition** etc.

23. Lok Sabha's rare witness contest for Speaker's post

- The election of the full-time Lok Sabha Speaker is scheduled to be held soon. President has appointed seven-time MP Bhartruhari Mahtab as the 'Speaker pro tem' of the 18th Lok Sabha.

Duties of A Speaker & Deputy Speaker

- *How Are The Speaker And Deputy Speaker Elected?*

Article 93 of the Constitution:

- It states that the Lok Sabha shall choose **two members** to be its Speaker and Deputy Speaker.
- The election of the Speaker is held on a **date fixed by the President.**
- All the Speakers in independent India have been elected unopposed. The election of the Deputy Speaker is held on a date fixed by the Speaker.
- **Vacancy:**
- The Speaker remains in office during the Lok Sabha's life.
- However, he/she has to vacate his/ her office earlier in any of the following three cases:
 - If he/ she ceases to be a member of the Lok Sabha
 - If he/ she resigns by writing to the Deputy Speaker

- If he/she is removed by a resolution passed by a majority of the Lok Sabha members (Effective majority). Such a resolution can be moved only after giving 14 days' advance notice.
- **Effective strength** refers to the *number of members present in the house*. This is calculated by deducting the number of vacant and absent seats from the total strength of the house.

When A Resolution For The Removal Of The Speaker Is Under Consideration Of The House

- He/ she cannot preside at the sitting of the House, though he/ she may be present.
- He/she can speak and participate in the House proceedings at such a time and vote in the first instance, though not in the case of an equality of votes.
- Whenever The Lok Sabha Is Dissolved; The Speaker **does not vacate** his/her office and continues till the newly-elected Lok Sabha meets.
- **Speaker Powers And Duties**
- *Primary responsibility: Maintains order and decorum* in the House for conducting its business and regulating its proceedings. This is his and he has final power in this regard.
- **Final interpreter** of the provisions of
 - the Constitution of India
 - the Rules of Procedure and Conduct of Business of Lok Sabha
 - the parliamentary precedents within the House.
 - Adjourns the House or suspends the meeting in the absence of a quorum
- **Quorum = One-tenth of the total strength of the House**

- He decides whether a bill is a **money bill or not**
- Speaker's decision on this **question is final**.
- **Don't vote in the first instance**. But can exercise a **casting vote** in the case of a tie.
- Presides over a joint sitting of the two Houses of Parliament
- A joint sitting is summoned by the President to settle a deadlock between the two Houses on a bill.
- Allow a 'secret' sitting of the House at the request of the Leader of the House.
- Decide the questions of disqualification of a member of the Lok Sabha arising on the grounds of defection under the **provisions of the Tenth Schedule**.
- Acts as the **ex-officio chairman of the Indian Parliamentary Group** which is a link between the Parliament of India and the various parliaments of the world.
- Appoints the chairman of all the parliamentary committees of the Lok Sabha and supervises their functioning.
- Chairman of the Business Advisory Committee, the Rules Committee and the General Purpose Committee.

Concerns

- *Misuse Of Provisions:* Rules for suspending members have often been misused against the opposition.
- For example, Recently, the leader of the Congress party in the Lok Sabha, Adhir Ranjan Chowdhury, was suspended for his remarks against the Prime Minister (which was later revoked), but no such action has been taken against the Bharatiya Janata Party (BJP) member, Ramesh Bidhuri, for passing communal allegations against the Bahujan Samaj Party Member of Parliament, Danish Ali.

- On Non-Referring of Bills to Standing Committees: The Speaker has the **authority to refer Bills** introduced to the Parliamentary Standing Committees. However, even significant Bills that require detailed scrutiny are not referred to such committees.
- For example: As against more than 60% of Bills referred to committees in the Lok Sabha during 2004-14, **less than 25% have been referred** during 2014-2023.
- Role in Debates: The Speaker's role in moderating debates and ensuring a fair opportunity for all members to speak and express their views has sometimes been questioned for alleged partiality in controlling the flow of discussions.

Associated Cases

Kihoto Hollohan vs Zachillhu Case (1992): Supreme Court declared that the decision of the **presiding officer is not final** and can be questioned in any court. It is **subject to judicial review** on the grounds of malafide, perversity, etc.

Keisham Meghachandra Singh vs The Hon'ble Speaker Manipur (2020): Speakers of assemblies and the Parliament must decide disqualification pleas **within a period of three months** except in extraordinary circumstances.

- Circumvent On The Anti-Defection Law: The Speaker of the House is expected to perform this constitutional role in a **neutral manner**, however, by observing many past instances, it has been inferred that the Speakers favor the ruling regime.
- Party Affiliation: Speaker, who is usually a member of the ruling party, may exhibit bias towards their own party while conducting proceedings or making decisions in the house.

Uncontested Since Independence

Since Independence, Lok Sabha Speakers have been chosen by consensus between both the ruling and opposition parties.

Only **MA Ayyangar, GS Dhillon, Balram Jakhar** and **GMC Balayogi** have been re-elected to the Speaker's posts in the subsequent Lok Sabhas.

The Speaker of the Lok Sabha has always been elected without any contest since Independence.

So, as the Opposition INDIA bloc forces an election for the Speaker of the 18th Lok Sabha, it is first such instance in the history of Independent India.

- **Road ahead:**
- *Follow British Practice:* Need to adopt the practices as in Britain to instill confidence in the office of the Speaker, who resigns from the associated political party to reflect his/her impartiality.
- *Constitutional and Moral Practice:* As the Presiding Officer of the Lok Sabha at the Centre and the Legislative Assembly in the States, the Speaker is required to act in an impartial manner.
- *An Independent Tribunal:* Need for an independent tribunal for resolving questions on disqualification of members on the basis of defection.
- *Resolve the Structural issues:* Issues regarding the manner of appointment of the Speaker and his tenure in office needs an urgent redressal.

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