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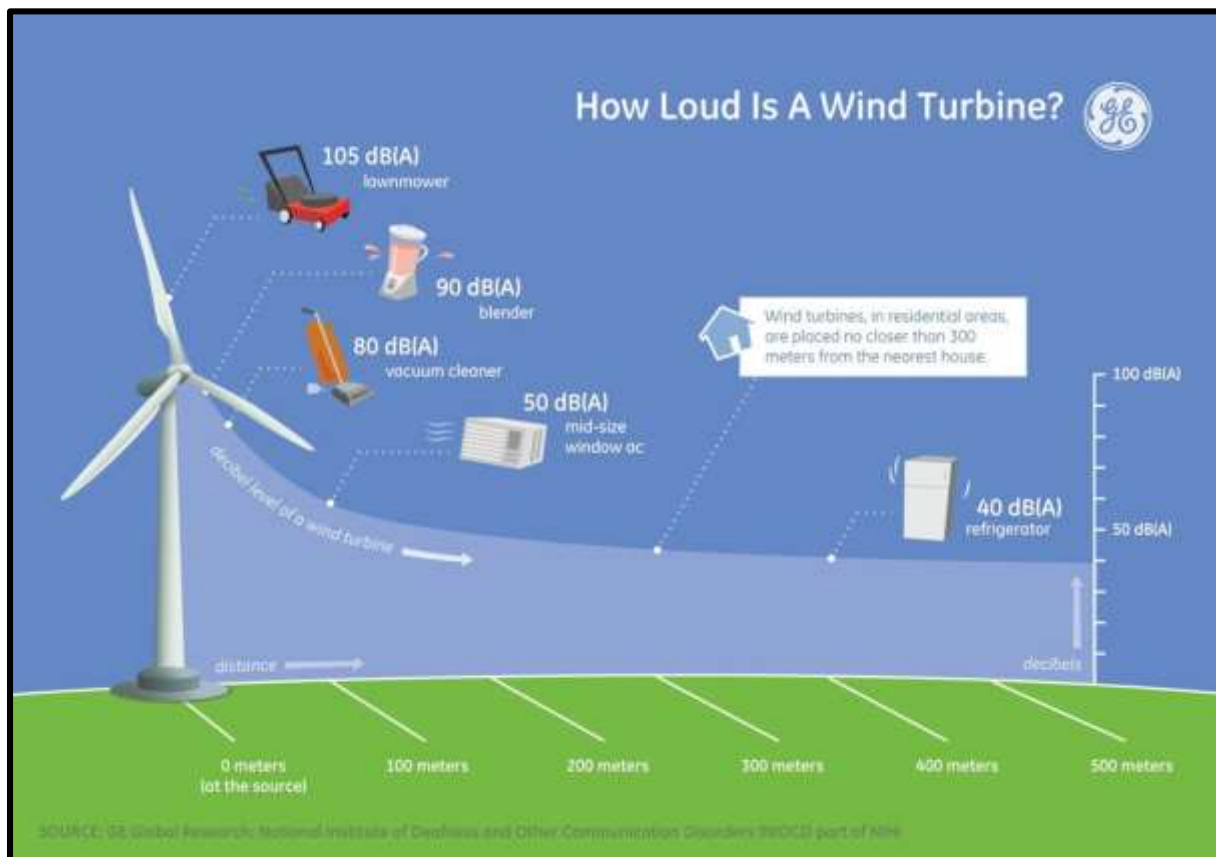
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Success is born of action...

Topic 1. IMPACT OF WIND FARMS

Importance for Prelims: Environment



Muppandal in Tamil Nadu is home to India's largest operational onshore wind energy facility in terms of installed capacity. Over 3 decades, there are visible social impacts on the people living in the districts of Tirunelveli, Thoothukudi and Kanyakumari.

Wind Power Potential in India:

- The Union government has set an ambitious target of achieving one hundred seventy five GigaWatt (GW) of installed capacity from renewable energy sources by 2022, which includes one hundred GW of solar and 60 GW of wind power capacity.
- The total renewable power installed capacity in the country stood at about a hundred and fifty GW presently.
- it's found by the National Institute for Wind Energy (based in Chennai) that western states have larger potential in terms of a stable, steady, and

speedy wind flow starting from the Gujarat, Maharashtra, Karnataka to Tamil Nadu and Andhra Pradesh.

- top States in India – installed wind power capacity The wind resource is highly site specific and its commercially exploitable potential is available only in seven States i.e. the Andhra Pradesh, Gujarat, Tamil Nadu, Madhya Pradesh, Maharashtra, Rajasthan and the Karnataka. wind power projects are set up by private developers based on techno-economic viability of the project.
- Tamil Nadu – Tamil Nadu tops the list of states with the largest installed wind power generation capacity in the country. Share of wind power in electricity generation was around 28th in 2018.
- Total wind capacity at the end of 2018 stood at 8,631 MW while its total installed electricity generation capacity stood at 30,447 MW at the end of 2018.
- **Gujarat** – Gujarat houses is the second-largest installed wind power generation capacity in the country.
- Share of wind power in electricity generation was around 19% in 2018.
- **Maharashtra** – Maharashtra houses is the third-largest installed wind power generation capacity in the country.
- **Karnataka** – Karnataka houses the fourth-largest installed wind power generation capacity in the country.
- **Rajasthan** – Rajasthan houses is the fifth-largest installed wind power generation capacity in the country.
- Wind contributes around 20% of total electricity generated in the state.

Advantages of Wind Park or Wind Farms:

- Renewable– which means that the source of energy isn't depleted once it's used.

- So, as we use wind energy we don't decrease the quantity of wind available; whereas in the case of fossil fuels, it leads to depletion of resources.
- Low-cost energy – Although wind turbines have high upfront costs, the energy they produce is cheap.
- Clean energy – Generating energy using wind turbines doesn't emit any greenhouse gases.
- Employment generation because of setting up of wind farms.

Disadvantages of Wind Park or Wind Farms:

- **Shrinking of Agricultural Land:** Wind Parks need to be spread over more land than other power stations and need to be built in wild and rural areas, which can lead to industrialization of the countryside.
- This will lead to threat of food security.
- The turbines and the crops don't set.
- The natural wind is different.
- The quality of the vegetables grown has been affected due to the turbine.
- It hasn't improved agriculture exactly Onshore wind is an intermittent source of energy, as turbines cannot generate electricity on demand, but only when the wind is blowing, and at sufficient strength.
- When wind strength is insufficient for turbines to operate, the fossil-fuel-based power supply is needed as a backup, which might temporarily increase greenhouse gas emissions.
- **Noise Pollution:** As per some research, people who live or work in the close proximity have experienced symptoms that include decreased quality of life, annoyance, stress, sleep disturbance, headache, anxiety, depression, and cognitive dysfunction.
- However, many researchers have differing opinions.

- The govt. has taken several steps to promote renewable energy, as well as wind energy, in the country.
- **These include:** permitting Foreign Direct Investment (FDI) up to 100% under the automated route, waiver of inter State transmission system (ISTS) charges for inter-state sale of solar and wind power for 30th to be commissioned by thirtieth June 2025, Declaration of trajectory for Renewable Purchase Obligation (RPO) up to the year 2022, setting up of ultra Mega Renewable Energy Parks to provide land and transmission to RE developers on a plug and play basis, laying of new transmission lines and creating new sub-station capacity for evacuation of renewable power, setting up of the Project Development Cell for the attracting and facilitating investments, standard Bidding guidelines for tariff based competitive bidding process for procurement of Power from Grid Connected solar PV and Wind projects. Government has issued orders that power shall be dispatched against Letter of Credit (LC) or advance payment to make sure timely payment by distribution licensees to RE generators. Conducting skill development programmes to the create a pool of the skilled manpower for implementation, operation and maintenance of RE projects.
- **In addition to the above, the following steps have been taken specifically for promoting wind energy:** Concessional custom duty exemption on certain components required for manufacturing of wind electric generators.
- Generation Based Incentive (GBI) is being provided to the wind projects commissioned on or before 31 March 2017.
- Technical support as well as wind resource assessment and identification of potential sites through the National Institute of Wind Energy, Chennai

Topic 2. BENGALURU FIRM CREATES BIOMATERIAL PLATFORM TO TACKLE CLIMATE CHANGE

Importance for Prelims: Environment

Bengaluru based start-up Mynusco has created a biomaterials platform for a circular bioeconomy helping farmers create value out of their crop residues and corporations to manufacture finished products using sustainable biocomposite materials.

- Mynusco is manufacturing wide range of the biomaterial pellets using crop residue such as the coffee husk, paddy straw and husk and bamboo waste sourced from agarbatti manufacturers among others.
- The creation of a biomaterials platform would help the scale up its operations and connect to the more converters, who create various various products using its biocomposite materials.
- **Reducing carbon footprint:** The products made using such bio composite materials are used in automotive, houseware and furniture industry among others displacing plastics and thereby reducing carbon footprint and helping flight climate change.
- India produces over five hundred million tonnes of crop waste per annum and about two- thirds of this can be either burnt or discarded resulting in pollution and greenhouse gas emissions.
- **About Biomaterials:** A biomaterial is a substance that has been engineered to interact with biological systems for a medical purpose, either a therapeutic (treat, augment, repair, or replace the tissues function of the body) or a diagnostic one. Biomaterials science encompasses elements of the medicine, biology, chemistry, tissue engineering and materials science.
- A hip implant is an example of an application of biomaterials.
- Note that a biomaterial is different from a biological material, such as bone, that is produced by a biological system.

- Additionally, care should be exercised in defining a biomaterial as biocompatible, since it is application-specific.
- A biomaterial that is biocompatible or suitable for one application may not be biocompatible in another.
- • Biomaterials can be derived either from nature or synthesized in the laboratory using a sort of chemical approaches utilizing metallic components, polymers, ceramics or composite materials.
- • Biomaterials also are used every day in dental applications, surgery, and drug delivery.
- For example, a construct with impregnated pharmaceutical products can be placed into the body, which permits the prolonged release of a drug over an extended period of time.

Topic 3. DEMOCRATIC REPUBLIC OF CONGO INVITES BIG OIL COMPANIES TO WORLD'S SECOND LARGEST RAINFOREST

Importance for Prelims: Environment

The government of the Democratic Republic of Congo (DRC) has approved a plan to auction sixteen oil blocks, 9 of that fall in the sensitive ecosystem of Cuvette Centrale, in the Congo river basin, the second-largest forested area in the world after the Amazon. Greenpeace Africa has called out the government, saying that decision would have “cataclysmic consequences” for global climate and local communities.

- Last week, the council for the most part approved the 2021 proposal by the Ministry of Hydrocarbons on the auctioning of sixteen oil blocks, a minimum of 9 of which are in the sensitive ecosystem of the Cuvette Centrale.
- The Cuvette Centrale is located in the centre of the Congo river basin.
- It contains around 30 gigatonnes of carbon, equivalent to 15 years of emissions from the United States.
- According to UNEP, around seventy five million people from over one hundred fifty distinct ethnic groups depend on the health of this forest that covers much of the Congo Basin peatland complex.
- The DRC, the Republic of the Congo and Indonesia signed the Brazzaville Declaration in March 2018 to protect this complex under the leadership of UN Environment and other Global Peatlands Initiative partners, UNEP has noted.
- Peatlands are a type of wetland which occur in almost every country and are known to cover at least three per cent of global land surface.
- The term ‘peatland’ refers to the peat soil and the wetland habitats growing on the surface according to the International Union for the Conservation of Nature.
- The Brazzaville declaration was signed jointly by Democratic Republic of Congo (DRC), Republic of Congo and Indonesia to promote better

management and conservation of the world's largest tropical Peatlands-Cuvette Centrale region in Congo Basin.

- The declaration was signed to conserve the region from unregulated land use and prevent its drainage and degradation.
- It has been signed on the side-lines of Third Partners Meeting of Global Peatlands Initiative held in Brazzaville, Republic of Congo.
- They are globally important carbon store.
- The unregulated exploitation of peatlands will potentially be detrimental to environment and to climate, because it may release carbon emissions that have been locked in for millennia.
- Peatlands are wetlands that contain mixture of decomposed organic material, partially submerged in layer of water, lacking oxygen.
- Their high carbon content makes them uniquely vulnerable to incineration if they are drained.
- The Cuvette Centrale region in Congo Basin is world's largest natural tropical peatlands.
- It stores three years equivalent of global greenhouse gas emissions.

Topic 4. TOWER DUMPING TECHNOLOGY

Importance for Prelims: Science & Tech

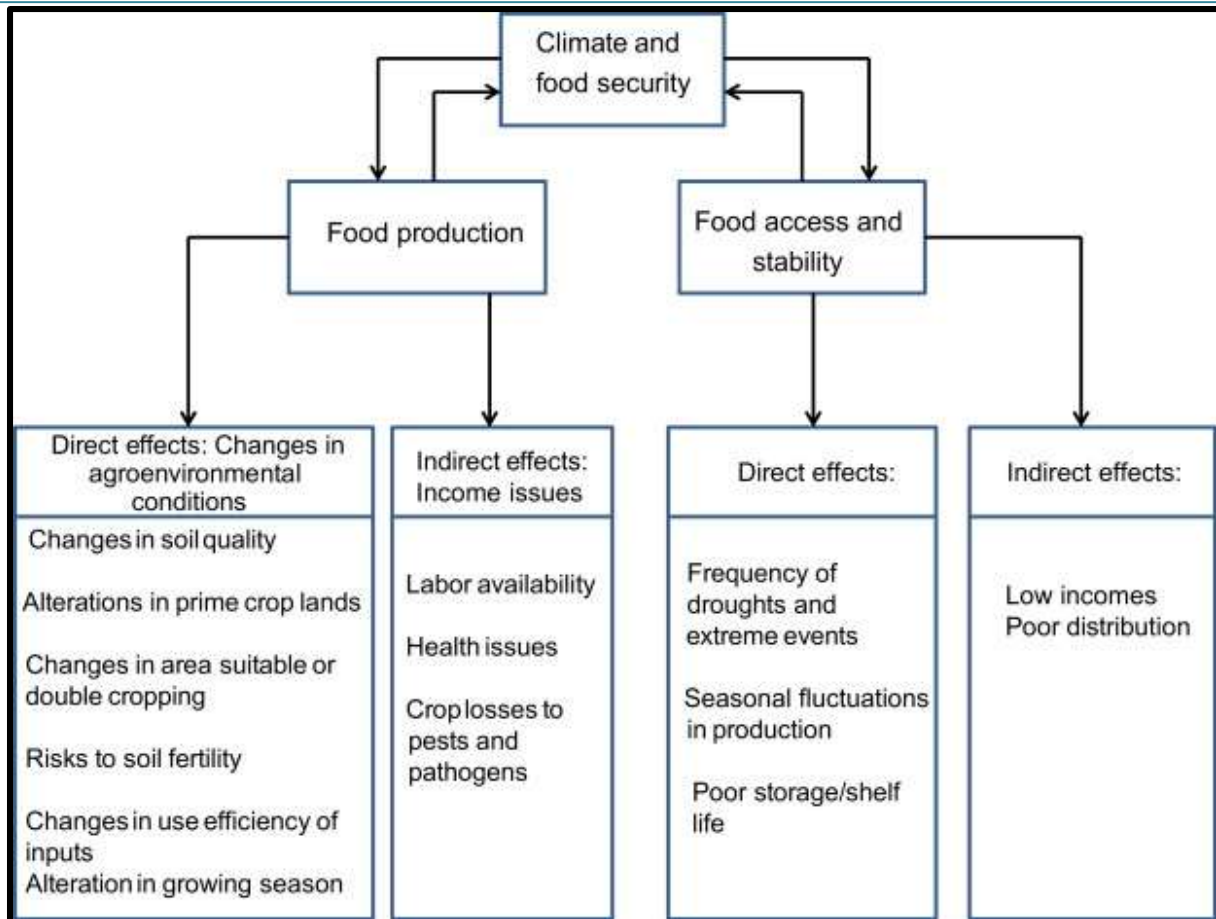
A 15-year-old tribal girl was allegedly gangraped and her male friend assaulted in Birbhum district on Thursday, the police aforesaid, adding that the minor, in her statement, aforesaid four to five people were involved in the incident.

About Tower Dumping Technology:

- Tower dumping technology helps investigators obtain information on cell phones active in the area around a particular mobile tower.
- The dump provides information about the cellphones active in a particular area where the mobile towers are located.
- It's been instrumental in cracking several high-profile cases, stated that it had been much easier to crack a case through the mobile tower dump if there have been suspects.
- Tower Dump Analysis is a software tool which helps law enforcement Agencies, police department & Security Agencies to Import, Analyze, Investigate and Work on the “Call data Records” (CDR) and any other such kind of records, received from various Mobile Operators quickly and with efficiency.

Topic 5. PHOSPHATIC FERTILIZERS

Importance for Prelims: Geography



India to become AtmaNirbhar in Phosphatic Fertilisers.

- The agricultural sector's success for the most part depends on the fertiliser industry, which manufactures some of the foremost important raw materials required for production of crops.
- Moreover, the Indian fertiliser industry is extremely crucial because it produces phosphorous-based fertilisers like diammonium phosphate (DAP), monoammonium phosphate (MAP), nitrogen, phosphorus, and potassium (NPKs) and single superphosphate (SSP).
- DAP is the world's most widely used phosphorus fertilizer. It is popular due to its relatively high nutrient content and its excellent physical properties.
- DAP is an excellent source of phosphorus (P) and nitrogen (N) for plant nutrition.

- It provides the correct proportion of phosphorous and nitrogen for the farming of grains such as wheat, barley, fruits, and vegetables.
- To manufacture these fertilisers, the country mainly depends on rock phosphate, which is a common, key raw material and for the most part sourced from Rajasthan and Madhya Pradesh.
- Despite this, India imports 90% rock phosphate from other countries.

Current production of phosphatic fertilisers in India:

- The fertiliser industry is highly regulated and monitored by the Indian government.
- Following this, the govt reimburses the {price|the worth|the value} distinction between the price of fertiliser production and price at which it's sold to the beneficiary in the type of subsidy.
- According to government data, the overall fertilisers production stood at 37 million metric tonnes, a 3% increase in the first 10 months of FY2021 compared with 36 million in the first 10 months of FY2020. Moreover, the country's import dependence (i.e., imports as a proportion of production plus imports) rose from 36% in first 10 months of FY2020 to 38% in the first 10 months of FY2021.
- **Steps taken to boost production of rock phosphate:** To make India self-reliant in production of fertilisers through indigenous resources, the Ministry of Chemicals and Fertilisers, under the Indian government, rolled out the following action plan:
 - 1. Rise in subsidy rates of phosphorus-based fertilisers:** In June 2021, the Cabinet Committee on Economic Affairs approved the proposal to hike subsidy rates for phosphorus-based fertilisers by 140% in a bid to provide relief to the farmers owing to the start of kharif sowing season. This additional subsidy, which totalled Rs. 14,775 crore (US\$ 1.98 billion), was announced as a one-time measure as of the COVID-19 relief.

2. Expand production of phosphorite deposits: The Ministry of Chemicals and Fertilisers directed domestic manufacturing companies to commercially exploit and increase production in the existing phosphorite deposits (three million metric tonnes), which are available in Rajasthan, Hirapur in Madhya Pradesh, central part of Peninsular India, Lalitpur in Uttar Pradesh, Mussoorie Syncline in Uttarakhand and Cuddapah Basin in Andhra Pradesh.

3. Explore potential potassic ore resources: The Department of Mining and Geological Survey planned to expedite exploration of potential potassic ore resources in Rajasthan's Satpura, Bharusari and Lakhasar; and other states including Uttar Pradesh, Madhya Pradesh, Rajasthan, Gujarat, Andhra Pradesh and Karnataka.

4. Encourage joint ventures abroad: The Department of Mining and Geological Survey planned to expedite exploration of potential potassic ore resources in Rajasthan's Satpura, Bharusari and Lakhasar; and other states including Uttar Pradesh, Madhya Pradesh, Rajasthan, Gujarat, andhra pradesh and Karnataka.

5. Focus on acquiring manufacturers of fertiliser raw materials aboard: The Department of Fertilisers is working to acquire manufacturers of fertilisers and raw materials overseas to secure the supply of raw materials to India.

Why need Phosphorus?

- Phosphorus is an essential nutrient required for the plant growth.
- It helps in root development, plant maturation, and seed development.
- If soils are deficient in phosphorus, food production becomes restricted, unless the nutrient is added in the form of fertilizers.
- Hence, to increase food production, an adequate amount of phosphorus is needed.

- Along with nitrogen and potassium, phosphorus is one of the most important elements for plant life.
- Soil gets depleted of phosphorus due to several reasons including being washed away by rain.
- Thus, modern farming is dependent on the use of phosphorus-based fertilizers.

Topic 6. BANKNOTES

Importance for Prelims: Economy

The reserve bank of India (RBI) seems to have shelved its plastic banknote project with the surge in digital payments, more because of its ability to withstand India's hot temperature and also the central bank's plans to launch a central bank Digital Currency (CBDC) in FY23.

The Bharatiya reserve bank Note Mudran private Ltd (BRBNMPL) and also the Security Printing and Minting Corporation of India Ltd (SPMCIL) have taken up the project of printing a billion pieces of bank notes in denomination of Rs 10 on all available plastic (polymer) substrates and issued to the public in five cities in different climatic zones — Kochi, Mysuru, Shimla, Jaipur and the Bhubaneswar — on a trial basis.

Powers?

- The Department of Currency Management in the reserve bank of india has the responsibility of administering the functions of currency management, a core function of the reserve bank in terms of the the Reserve Bank of India Act, 1934.
- This involves forecasting the demand for the fresh notes and coins, placing the indent with the four printing presses and the mints, receiving supplies against those indents and distributing them through the 18 offices of the Bank, a large network of currency chests, repositories and little coin depots.

Acts and Laws?

- Section 22 of the RBI Act, Reserve Bank of India has the sole right to issue banknotes in India.
- Section twenty five states that the design, form and material of bank notes shall be like could also be approved by the Central Government after made of the recommendations created by the Central Board of RBI.
- The Reserve Bank in terms of its clean note policy, provides good quality banknotes to the members of the public.

- The Reserve Bank, in consultation with the Central Government and other stakeholders, estimates the quantity of banknotes that are likely to be needed denomination-wise in a year and places indents with the various currency printing presses for the supply of the banknotes.
- The govt of India is also responsible for the designing and minting of coins in the varied denominations as per the Coinage Act, 2011.
- The Indian 1-rupee note (Rs 1) is made up of hundred 100 paise as Rs 1 = 100 paise.
- Currently, it is the smallest Indian banknote in circulation and the only one being issued by the Government of India.
- **Printing:** Bank notes are printed at four currency presses, two of which are owned by the Government of India through its Corporation, Security Printing and Minting Corporation of India Ltd.
- (SPMCIL) located at the Nasik (Western India) and the Dewas (Central India). 2 are owned by the reserve bank, through its wholly owned subsidiary, Bharatiya reserve bank Note Mudran private Ltd.
- (BRBNMPL) located at Mysore (Southern India) and Salboni (Eastern India).
- Coins are minted in the four mints owned by SPMCIL.
- The mints are the located at the Mumbai, Hyderabad, Kolkata and NOIDA.
- The coins are issued for circulation solely through the reserve bank in terms of Section thirty eight of the reserve bank of india Act.
- **Distribution:** The Reserve Bank presently manages the currency operations through its 19 Issue Offices located at Ahmedabad, Bengaluru, Belapur, Bhopal, Bhubaneswar, Chandigarh etc.
- Further, a wide network of currency chests maintained and managed by scheduled banks are part of currency management architecture.

- The issue Offices receive fresh banknotes from the currency printing presses which in turn send fresh banknote remittances to the currency chests.
 - Direct remittances by the presses to the currency chests can also happen.
 - The Reserve Bank offices located at Hyderabad, Kolkata, Mumbai and New Delhi (Mint Linked Offices) receive coins from the mints.
 - These offices then send the coins to the other offices of the Reserve Bank who in turn send the same to Currency Chests and Small Coin Depots.
- Banknotes in circulation? Banknotes in India are currently being issued in the denomination of Rs 10, Rs 20, Rs 50, Rs 100, Rs 200, Rs 500, and Rs 2000.
- These notes are known as banknotes as they're issued by the reserve bank of India.
 - The printing of notes in the denominations of Rs 2 and Rs 5 has been discontinued though it continues to be legal tender. Rs 1 notes are issued by the Government of India from time to time and such notes including those issued in the past also continue to be legal tender for transactions.
 - The bank branches receive the banknotes and coins from the Currency Chests and Small Coin Depots for further distribution among the public.
 - In terms of Section twenty four of the reserve bank of India Act, 1934, bank notes shall be of the denominational values of 2 rupees, 5 rupees, ten rupees, twenty rupees, fifty rupees, 100 rupees, 5 hundred rupees, one thousand rupees, 5 thousand rupees and 10 thousand rupees or of such other denominational values, not exceeding 10 thousand rupees, or of such other denominational values, not exceeding ten thousand rupees, as the Central Government may, on the recommendation of the Central Board, specify in this behalf.

Topic 7. E-DAR PORTAL

Importance for Prelims: Governance

A web portal designed by the govt in consultation with insurance companies can provide instant info on road accidents with a few clicks and help accelerate accident compensation claims, bringing relief to victims' families.

- The Ministry of the Roads, Transport and the Highways (MoRTH) has developed the portal named 'e-DAR' (e-Detailed Accident Report). Digitalised detailed Accident Reports (DAR) will be uploaded on the portal for easy access.
- The web portal are going to be linked to the Integrated Road Accident info (iRAD).
- From iRAD, applications to more than 90% of the datasets would be pushed directly to the e-DAR.
- Stakeholders like the police, road authorities, hospitals, etc., are required to enter very minimal information for the e-DAR forms. Thus, e-DAR would be an extension of the iRAD.
- Benefits: e-DAR portal would conduct multiple checks against fake claims by conducting a sweeping search of vehicles involved in the accident, the date of accident, and the First Information Report number.
- The portal would be linked to different government portals like 'Vahan' and would get access to info on driving licence details and registration of vehicles.
- For the benefit of investigation officers, portal would provide geo tagging of the exact accident spot along with the site map.
- This would notify the investigating officer on his distance from the spot of the incident in the event the portal is accessed from any other location.
- Details like photos, video of the accident spot, damaged vehicles, injured victims, eye-witnesses,, would be uploaded immediately on the portal.
- Apart from the state police, an engineer from the Public Works Department or the local body will receive an alert on his mobile device and the official

concerned will then visit the accident site, to examine it, and feed the required details, like the road design.

- Hotspots for accidents would also be identified therefore as to obtain solutions to avoid accidents at these hotspots.

Topic 8. LIFE-LONG CABINET STATUS

Importance for Prelims: Polity

A public interest litigation (PIL) filed in the High Court of Bombay at Goa has challenged the decision of the Goa government to accord life-long Cabinet status to former chief minister Pratapsingh Rane in January this year.

- **Background:** PIL has urged the court to quash the January 7 notification that had conferred the “lifetime status of the rank of Cabinet minister”.
- Mr PratapsinghRaoji Rane, former chief minister and former speaker (of the Goa Assembly) has completed legislator years as a politician.
- The Cabinet has decided that in future also those who complete 50 years and hold posts like CM and speaker will be given the Cabinet status even after their retirement. Challenges in giving Life-long cabinet status Before granting the lifetime cabinet status, the cabinet didn't obtain financial sanction from the finance ministry as required under the rules, as the resolution involved financial expenditure.
- PIL, has stated that the Constitution does not provide for conferring Cabinet status on any individual other than a current minister and that there is no law under which Cabinet status can be granted to an individual who was a former minister.
- Goa has a 12-member cabinet and therefore the conferment of cabinet status on Rane results in the number of cabinet ranks being thirteen, which exceeds the mandate of law, against the purpose of the 91st amendment to the Constitution.

What is Cabinet?

- The Council of Ministers is a large body comprising a number of ministers of various ranks seldom meets.
- The Cabinet is a smaller inner body within the Council of Ministers and it is the effective policy-making organ of the Council.
- It consists of the principal Ministers on the whom rests the real responsibility of formulating policies.

- It is to be noted that even though this system of government is widely known as the Cabinet system of government.
- **Constitutional Position of Cabinet:** the original constitution didn't specifically mention the word Cabinet anywhere and it's based on the understandings and conventions of Britain.
- Article seventy four of the Constitution provides only the Council of Ministers and makes no mention of cabinet.
- It had been through the forty fourth Constitutional amendment Act, 1978 that the word cabinet was used under Article 352.
- All members of the Council of Ministers are not members of the Cabinet.
- **Composition of Cabinet:** Composition of the cabinet is flexible.
- It's for the Prime Minister to determine from time to time the compositions of the cabinet, though because of the relative importance of certain departments, their ministers are invariably its members.
- Appointment of cabinet Minister: cabinet Ministers are appointed by the President.
- The Prime Minister selects his cabinet Ministers.
- The President has to simply accept the recommendations of the Prime Minister.
- The President has got to accept the team chosen by him. Qualification of cabinet Minister: cabinet Ministers should be a member of either House of Parliament.
- If a person who is not a member of either House of the Parliament is appointed as a Minister, he shall cease to be a minister after six months unless in the meanwhile Minister has to get himself/herself elected to either House of Parliament within six months.

- Disqualification of cabinet Minister because of Defection: also, if a member of Parliament has been disqualified on the ground of defection, he wouldn't be eligible to become a Minister.
- But if he again gets nonappointive in the next freshly held Parliamentary election then he are going to be eligible to become a minister.
- Role of Cabinet It is the Cabinet that controls the Parliament and governs the country.
- The Cabinet ministers are the members of the Cabinets, while a Minister of State may attend a Cabinet meeting when matters pertaining to his department are to be discussed.
- Cabinet decides major questions of policies. Its decisions are binding on all ministers.
- The various government departments carry out the cabinet's policy decision by administering the law and devising measures for enactment as law by Parliament.
- Higher-ranking appointments, such as constitutional authorities and senior secretariat administrators, are under the control of the Cabinet.
- The Cabinet is in charge of all international policy and affairs.
- It's the cabinet and not the Council of Ministers who advises the President, its advice is binding on him.

Topic 9. WHAT IS TWITTER 'POISON PILLS'?

Importance for Prelims: Economy

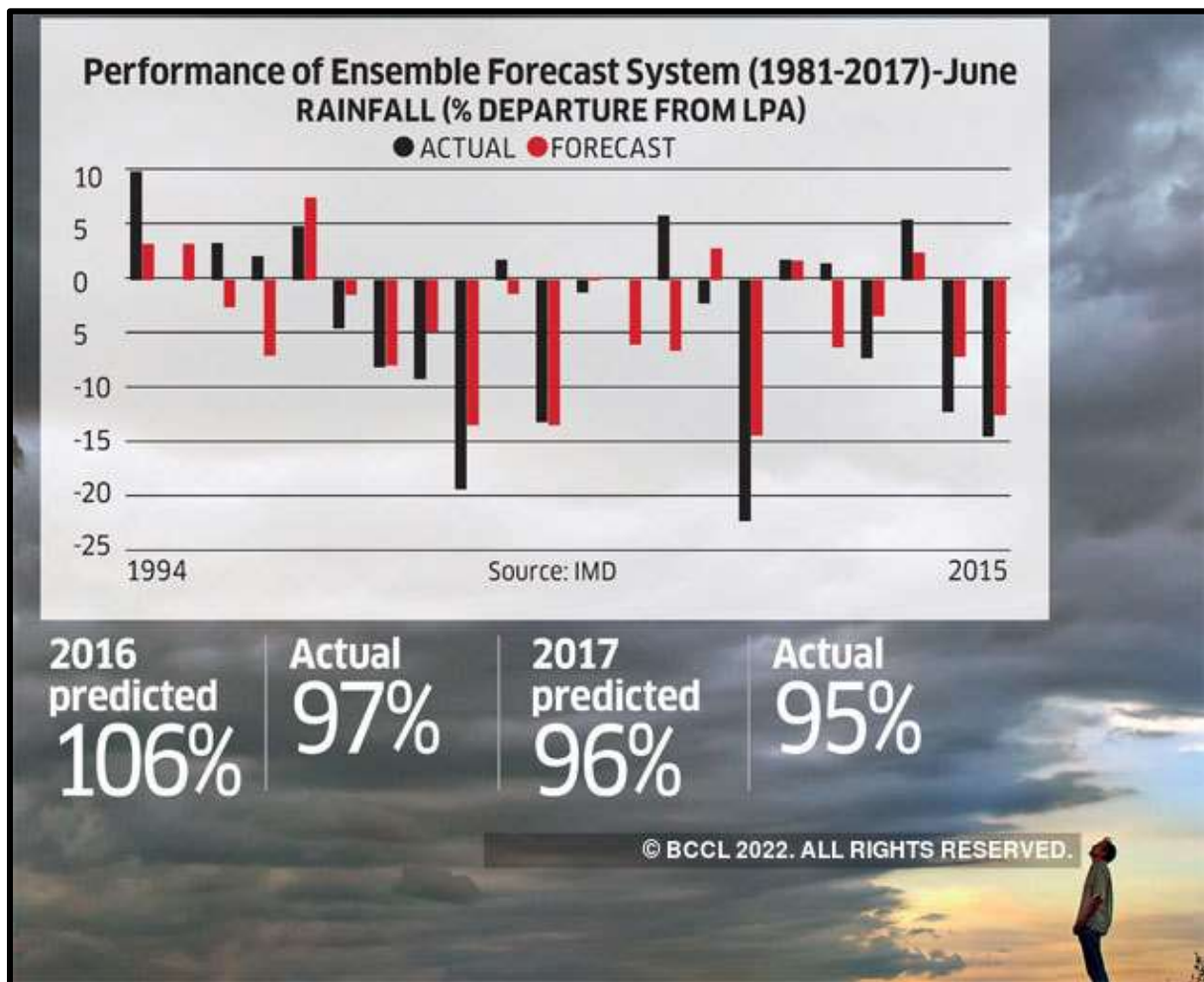
Twitter is trying to thwart billionaire the Elon Musk's takeover attempt with a "poison pill", a financial device that the companies have been wielding against unwelcome suitors for many years

- In order to protect themselves from hostile takeovers during these testing times, many companies across the world are taking 'poison pills' to ward off hostile takeovers.
- The term poison pill refers to a defense strategy utilized by a target firm to prevent or discourage a potential hostile takeover by an acquiring company.
- Potential targets use this tactic in order to make them look less attractive to the potential acquirer.
- The ingredients of the each poison pill vary, but they're all designed to give the corporate boards an option to flood the market with so much newly created stock that a takeover becomes prohibitively expensive.
- It is emerged in the 1980s, when the lawyers for an oil company targeted by corporate raider T.
- Boone Pickens advised the company to flood the market with new shares, making it more difficult for Pickens to buy a controlling stake.
- The typical poison pill is structured as a shareholder rights agreement, where the existing shareholders of the target company get rights to buy additional shares the moment a takeover is announced.
- These shares may carry a steep discount to the market price or additional voting rights.
- The mechanism protects minority shareholders and avoids the change of control of company management.
- Implementing a poison pill might not always indicate that the company isn't willing to be acquired.

- At times, it may be enacted to get a higher valuation or more favorable terms for the acquisition

Topic 10. IMD FORECASTS ‘NORMAL’ MONSOON NO EL NINO

Importance for Prelims: Geography



Rainfall is expected to be ninety nine per cent of the historical average for the country throughout June-September.

- The sanguine forecast is based on “La Niña” conditions prevailing and likely to continue through the four-month monsoon season.
- La Nina is the opposite of El Niño — an the abnormal warming of the eastern Pacific waters usually causing heavy rains around the South America, but also drought in the other western end and whose effects percolate to India.
- Besides La Nina, which is generally favourable for the Indian monsoon and also the IMD is counting on a “neutral” indian ocean Dipole (IOD).

- A “negative” IOD, whereby the eastern indian ocean waters off Indonesia and Australia turn unusually warm relative to the western part, is considered bad for the monsoon.
- The IMD believes that this time there will be La Niña and “neutral” IOD, at least till early in the season.

Topic 11. TELECOM SPECTRUM AUCTION

Importance for Prelims: Science & tech

Spectrum Auction 2021

- Reliance Jio expected to be the aggressive bidder
- Jio might also bid in 700 MHz band
- Bharti Airtel may bid for spectrum in 900 MHz & 2100 MHz bands
- Vodafone Idea will likely miss this auction



Why are telecom companies upset with the regulator despite its proposal to cut prices by 40%?

The story so far:

- The telecommunication regulatory authority of India (TRAI) has released recommendations on auction of spectrum, as well as those likely to be used for offering 5G services.
- The telecom regulator has suggested cutting prices of airwaves across various bands by 35- 40% from its earlier proposed base price.
- However, the Cellular Operators Association of India, whose members include the three private telcos, Bharti Airtel, Reliance Jio and Vodafone Idea, has expressed disappointment, given the industry's demand for a 90% reduction in the prices.

What is Spectrum?

- Spectrum refers to the invisible radio frequencies that wireless signals travel over.
- Those signals are what enable us to make the calls from our mobile devices, tag our friends on the Instagram, call an Uber, pull up directions to a destination, and do everything on our mobile devices.
- The frequencies we use for wireless are only a portion of what is called the electromagnetic spectrum.
- Portions of electromagnetic spectrum are grouped in “bands” depending on their wavelengths—the distance over that the wave’s shape repeats.
- The full electromagnetic spectrum ranges from three Hz (extremely low frequency) to 300 EHz (gamma rays).
- The portion used for wireless communication sits within that space and ranges from about 20 KHz to 300 GHz.
- When we talk about radio spectrum, we are talking about the vary of radio frequencies that are used for communicating.

How Does Spectrum Work?

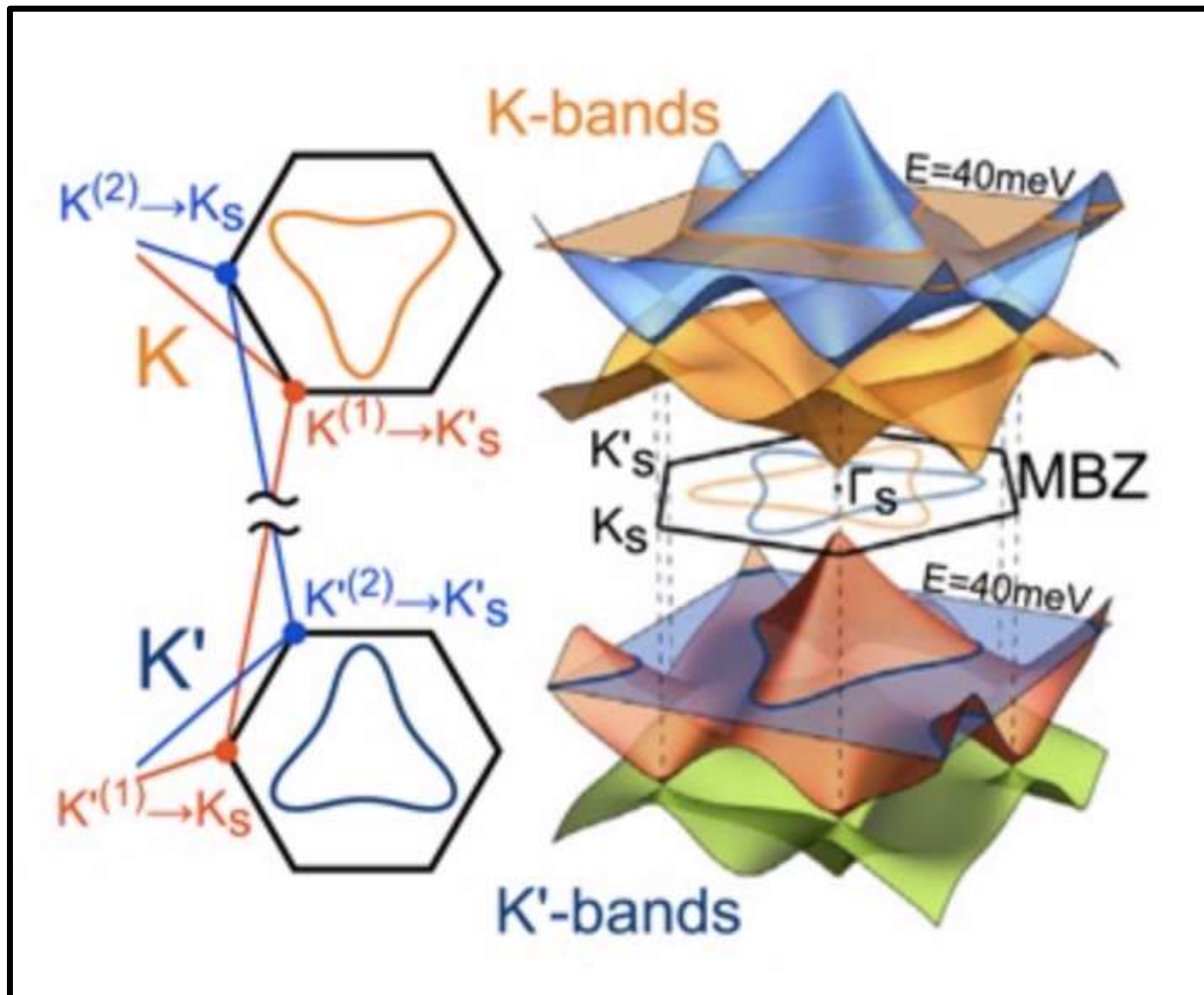
- Because a range of spectrum frequencies can be used for cellular communications, different bands have slightly different characteristics. For the purposes of wireless communication, we can think of spectrum in three categories: low-, mid-, and high-band spectrum.
- Low-band spectrum (under 3 GHz) travels longer distances with minimal signal interruption.
- Today’s wireless networks are built primarily on low-band spectrum, and the wireless industry has used this spectrum to build highspeed wireless networks.

- High-band spectrum (above twenty four GHz) travels a lot of shorter distances—think meters, not miles—compared to low-band spectrum, however offers high capacity and ultra-fast speeds.
- Mid-band spectrum (between three and twenty four GHz) blends the characteristics of both low- and high-band spectrum—providing a mix of coverage and capacity.
- **Spectrum Auction:** A spectrum auction is a process whereby a government uses an auction system to sell the rights to transmit the signals over specific bands of the electromagnetic spectrum and to assign scarce spectrum resources.
- In India, the Department of the Telecommunications (DoT) conducts auctions of the licenses for electromagnetic spectrum. India was among the early adopters of spectrum auctions beginning auctions in 1994.
- **TRAI:** The Telecom Regulatory Authority of India (TRAI) was established on 20th February, 1997 by the Telecom Regulatory Authority of India Act, 1997.
- **Objectives of TRAI:** TRAI's mission is to create and nurture conditions for growth of telecommunications in the country.
- TRAI regulates telecom services including fixation/revision of tariffs for telecom services which were earlier vested in the Central Government.
- It also aims to provide a {fair|a good} and transparent policy environment which promotes a level playing field and facilitates fair competition.
- **Headquarters:** The head office of the Telecom Regulatory Authority of India (TRAI) is located at New Delhi.
- The function of the TRAI is to make recommendations on the following matters: Need for introduction of new service provider.
- Revocation of license for non-compliance of terms and conditions of licence.

- Measures to facilitate competition and promote efficiency in the operation of telecommunication services to facilitate their growth. Technological improvements in the services provided by the service suppliers.

Topic 12. TWISTRONICS

Importance for Prelims: Science & Tech



Graphene material has been known to show exotic phases ranging from insulator to superconductor.

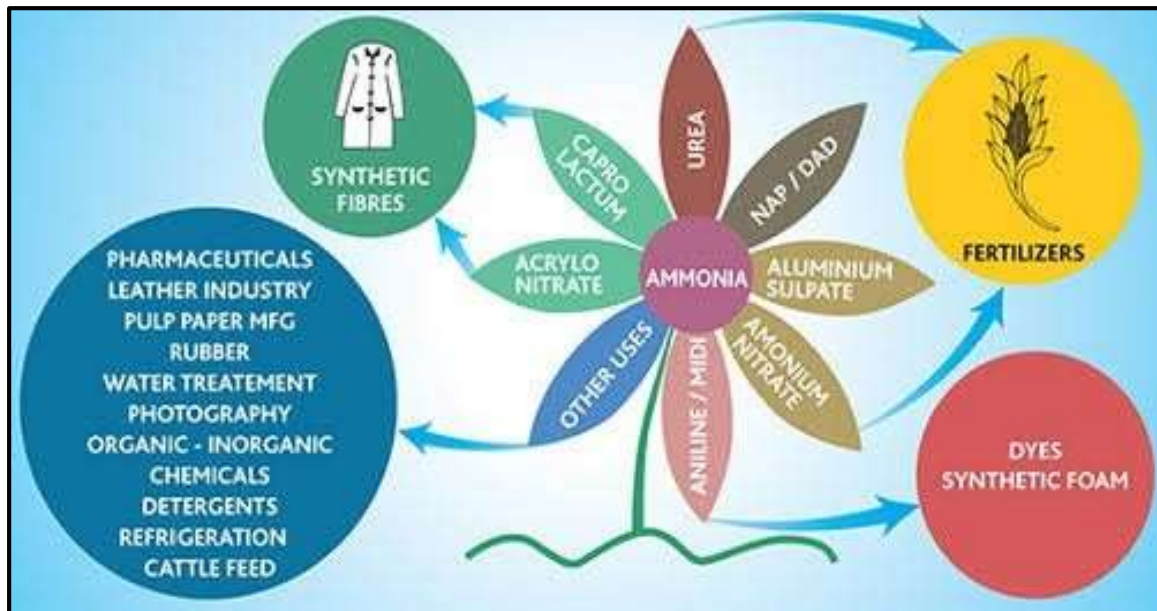
About Twistronics:

- Twistronics (from twist and electronics) how study of however the angle (the twist) between layers of two-dimensional materials can Change their electrical properties.

- Materials such as bilayer graphene have been shown to have vastly different electronic behavior, ranging from non-conductive to superconductive, that depends sensitively on the angle between the layers.
- Twisted Bilayer Graphene: Graphene is a two dimensional material comprising a single layer of carbon atoms arranged in a hexagonal lattice.
- Stacks of graphene layers will make up graphite.
- Graphene possesses several interesting properties by itself, and, moreover, it can be combined with other materials to form useful devices.
- One such material is twisted bilayer graphene.
- This is made by placing two layers of graphene on top of each other such that they are aligned well, and then twisting one layer, so that it makes a well calibrated, known angle with respect to the former.
- When such a twist is given, the lattice shows what are known as moire patterns.
- Moire patterns are wavy fringe like patterns that we see, for example, when two layers of synthetic fabric overlap and move with respect to each other.
- Bilayer graphene can be used to construct field effect transistors or tunneling field effect transistors, exploiting the small energy gap.
- A material system known as magic-angle twisted trilayer graphene exhibits superconductivity.
- The observation that this superconductivity persists under a strong magnetic field may lead to advances in quantum computation.

Topic 13. AMMONIA POLLUTION IN YAMUNA

Importance for Prelims: Environment



Water supply was disrupted in parts of Delhi all over again when ammonia levels within the Yamuna river remained high on Saturday, according to the Delhi Jal Board (DJB).

What is Ammonia and what are its effects?

- Ammonia could be a colourless gas and is used as an industrial chemical in the production of fertilizers, plastics, synthetic fibres, dyes and other product. Its chemical formula is NH_3 .
- Ammonia occurs naturally in the environment from the breakdown of the organic waste matter, and may also be find its way to ground and surface water sources through industrial effluents or through contamination by sewage.
- Ammonia reduces the amount of oxygen in water as it is transformed to oxidised forms of nitrogen.
- Hence, it also will increase biochemical oxygen demand (BOD).

- If the concentration of ammonia in water is above one ppm it's toxic to fishes.
- In humans, long term ingestion of water having ammonia levels of 1 ppm or above may cause damage to internal organs.
- **A cause of concern:** The concentration of ammonia in the river was 4 ppm (parts per million), seven times the level of around 1 ppm that the Delhi Jal Board's water treatment plants (WTPs) can process.
- The acceptable maximum limit of ammonia in drinking water, as per the Bureau of Indian Standards, is 0.5 ppm.

Where does Ammonia come from?

- Ammonia is produced for commercial fertilizers and other industrial applications.
- Natural sources of the ammonia include the decomposition or the breakdown of the organic waste matter, gas exchange with the atmosphere, forest fires, animal and human waste, and nitrogen fixation processes.

How is it treated?

- The DJB at present does not have any specific technology to treat ammonia.
- The only solution it adapts is to reduce production at its water treatment plants.
- Additionally to this, the board mixes raw water that carries a high concentration of ammonia with a fresh supply.
- The amount of chlorine added to disinfect raw water is also increased when high levels of ammonia are detected.

What is the long-term solution to the problem?

- Ozone-based units to treat ammonia levels up to 4 ppm should be installed at Water Treatment Plants. Stringent implementation of guidelines against dumping harmful waste into the river, and ensuring untreated sewage

doesn't enter the water are 2 things pollution control bodies are expected to do.

- But, a more organic method agreed upon by environmentalists and experts is to maintain a sustainable minimum flow, called the ecological flow.
- This can be the minimum amount of water that should flow throughout the river at all times to sustain underwater and estuarine ecosystems and human livelihoods, and for self-regulation.
- The lack of a minimum ecological flow also means an accumulation of other pollutants.
- **About Yamuna River:** The river Yamuna, a major tributary of river Ganges, originates from the Yamunotri glacier near Bandarpooch peaks in the Mussoorie range of the lower Himalayas in Uttarkashi district of Uttarakhand.
- • It meets that the Ganges at the Sangam in Prayagraj, Uttar Pradesh after the flowing through Uttarakhand, Himachal Pradesh, Haryana and Delhi.
- **Length:** 1376 km Important Tributaries: Chambal, Sindh, Betwa, Ken, Tons, Hindon.

Topic 14. WHAT IS PARBOILED RICE AND WHY CENTRE WANTS TO STOP PURCHASING IT?

Importance for Prelims: Agriculture



Technological improvements in the services provided by the service providers. Last week, Telangana CM and members of his cabinet staged a protest demanding a uniform paddy procurement policy. The protest came after the Centre said it absolutely was stopping the purchase of excess parboiled rice, of which Telangana could be a major producer.

What is Parboiled Rice?

- The dictionary meaning of ‘parboil’ is ‘partly cooked by boiling’.
- Thus, the expression parboiled rice refers to rice that has been partially boiled at the paddy stage, before milling.
- Parboiling of rice is not a new practice, and has been followed in India since ancient times.
- However, there is no specific definition of parboiled rice of the Food Corporation of India or the Food Ministry.

How is it prepared?

- There are several processes for parboiling rice.
- The Central Food Technological research Institute (CFTRI), Mysuru, uses a method in which the paddy is soaked in hot water for 3 hours, in contrast to the a lot of common method in which paddy is soaked for 8 hours.
- The water is then drained and also the paddy steamed for twenty minutes. Also, the paddy is dried in the shade in the method used by the CFTRI, but is sundried in the common method.
- The Paddy Processing Research Centre (PPRC), Thanjavur follows a method known as the chromate soaking process.
- It uses chromate, a family of salt in which the anion contains both chromium and oxygen, which removes the odour from the wet rice.
- All processes generally involve three stages—soaking, steaming and drying.
- After passing through these stages, the paddy goes for milling.

Are all rice varieties suitable for parboiling?

- Typically, all varieties can be processed into parboiled rice, however it's ideal to use long slender varieties to prevent breakage throughout milling.
- However, aromatic varieties shouldn't be parboiled because the process will make it can lose its aroma. **What are the benefits?**
- Parboiling makes rice tougher.
- This reduces the chances of the rice kernel breaking during milling.
- It also will increase the nutrient value of the rice.
- It has a higher resistance to insects and fungi.
- Disadvantages: The rice becomes darker and may smell unpleasant due to prolonged soaking.
- Besides, setting up a parboiling rice milling unit requires a higher investment than a raw rice milling unit.

How much is the stock of parboiled rice in the country?

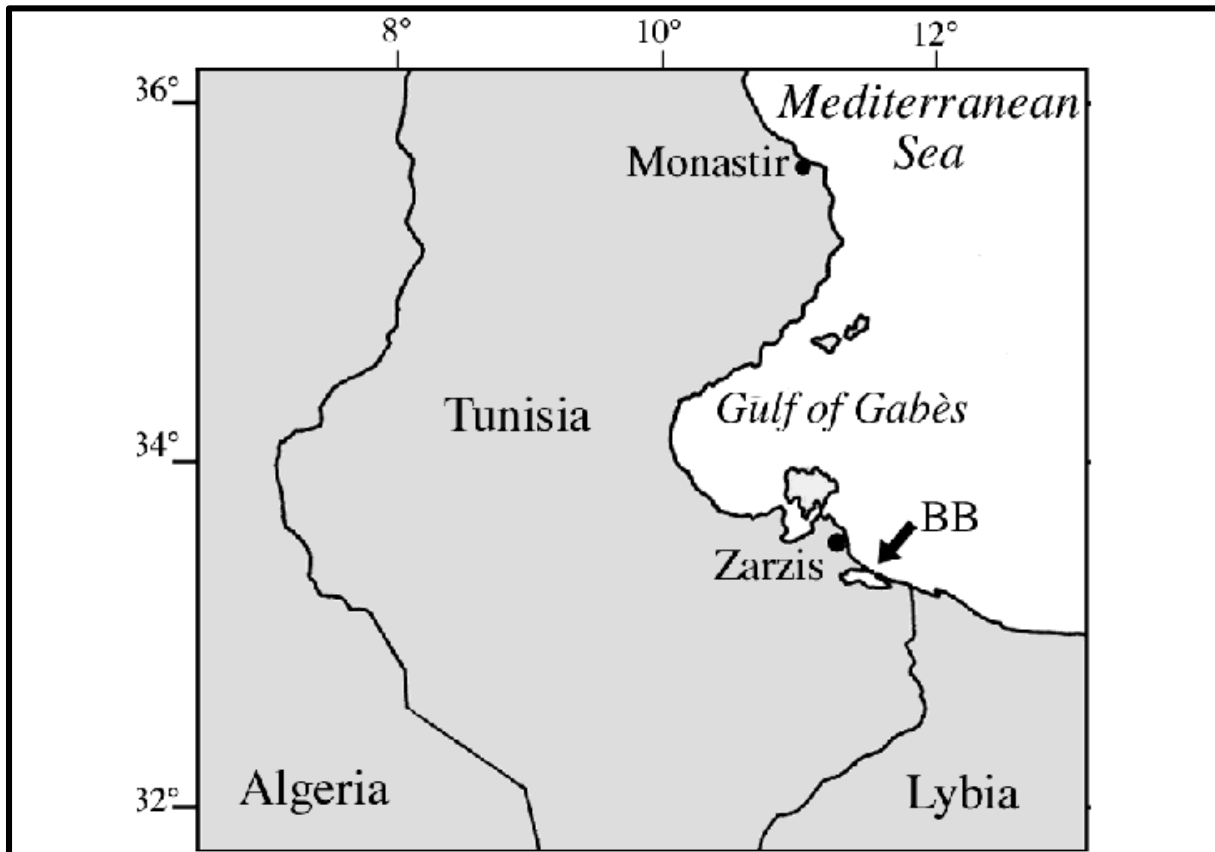
- According to the Food Ministry, the total stock of parboiled rice is 40.58 lakh metric tonnes (LMT) as on April 1, 2022.
- Out of this, the highest stock is in the Telangana at 16.52 LMT, followed by the Tamil Nadu (12.09 LMT) and Kerala (3 LMT).
- The stock was in the range 0.04–2.92 LMT in ten other states —Andhra Pradesh, Chhattisgarh, Odisha, Jharkhand, West Bengal, Karnataka, Bihar, Punjab and Haryana.
- From the other 10 rice-producing states, including Telangana, the Ministry has no plan to procure parboiled rice.
- In the coming days, the total parboiled rice stock will increase to 47.76 LMT.

How high is the demand?

- The Food Ministry pegs the parboiled rice demand at 20 LMT per annum for distribution under the National Food Security Act, 2013.
- According to the Ministry, the demand for parboiled rice has come down in recent years.
- In the previous few years, production in parboiled rice-consuming states like Jharkhand, Kerala and Tamil Nadu has enhanced, resulting in less movement to the deficit states.
- Earlier, the Food Corporation of India (FCI) used to procure parboiled rice from states like Telangana to supply to these states.
- However in recent years, parboiled rice production has enhanced in these states.
- The current stock is sufficient to meet the demand for the next two years.

Topic 15. GULF OF GABES

Importance for Prelims: Geography



A tanker carrying 750 tonnes of the diesel fuel from Egypt to Malta sank Saturday in the Gulf Of Gabes off Tunisia Coast.

Gulf of Gabes:

- The Gulf of Gabes also known as Lesser Syrtis contrasting with the Greater Syrtis in Libya, is a gulf on Tunisia’s east coast in the Mediterranean Sea, off North Africa. The gulf roughly spans the coast from the sfax to Djerba.
- At the head of the gulf is the city of Gabès (Ghannouche) where the tides have a large range of up to 2.1 m at spring tides.
- Both Gabès and Sfax are major ports on the gulf, supporting sponge and tuna fisheries, with Gabès being the economic and administrative centre.
- It is 60 miles (100 km) long and 60 miles wide and is bounded by the Qarqannah (Kerkena) Islands on the northeast and by Jarbah (Djerba) Island on the southeast.

- **Regional economy of the gulf:** Except for the Strait of Gibraltar and the Gulf of Venice, it is the only part of the Mediterranean with a substantial tidal range, causing the uncovering of extensive sandbanks at the low water.
- Sponge and tuna fisheries are located at the main ports of Qābis (Gabès) and Safāqis (Sfax).
- Oil and natural-gas deposits have been found in the gulf, east of Safāqis.

Topic 16. INDIA-MAURITIUS RELATIONS

Importance for Prelims: IR



The Mauritius PM Pravind Kumar Jugnauth is in the India on an eight-day visit. Ministry of External Affairs (MEA) said that PM Jugnauth will participate in the ceremony of the WHO-Global Centre for traditional medicine in Jamnagar and also the global Ayush Investment and Innovation Summit in Gandhinagar

India- Maldives Relations:

- Historical Since 1820's, Indian workers started coming to Mauritius to work on sugar. The people who visited Mauritius from India took their language, customs, traditions, religious beliefs with them to their new abode.
- November 2, 1834, marks the day when the ship 'Atlas' docked in Mauritius carrying the first batch of Indian indentured labourers.
- This day is now observed in Mauritius as 'Aapravasi Day'.
- As a tribute to Gandhiji and also the Indian freedom struggle, the National Day of Mauritius is celebrated on March twelve (the date of launch of Dandi Salt March).

- Political relation after the independence in March, 1968, the first PM and also the Father of the Mauritian Nation, Seewoosagur Ramgoolam accorded centrality to the India in the Mauritius' foreign policy.
- Indian PM Narendra Modi visited Mauritius in the year 2015, as a Chief Guest at the Mauritian National Day celebrations.
- During his visit, PM Modi commissioned the Offshore Patrol Vessel Barracuda, financed by a Government of India (GoI) Line of Credit, into the Mauritian Coast Guard.
- It absolutely was throughout this visit that the PM Modi had outlined India's maritime cooperation vision of SAGAR – Security and Growth for all in the Region.
- In March 2018, President of India visited Mauritius as a Chief Guest to the commemorative events marking the fiftieth anniversary of the independence of Mauritius.
- In February 2021, throughout the visit of Indian foreign minister to Mauritius, the 2 countries also signed a Comprehensive Economic Cooperation and Partnership Agreement (CECPA).
- This was India's 1st such agreement with an African country.

Economic Relations:

- India is the Mauritius' largest trading partner and has been the largest exporter of the goods and services to the Mauritius since 2007.
- In 2020, India represented 10% share of Mauritian total imports and ranked 3rd in their main countries of import.
- The volume of exports from India to Mauritius was 1,027 million \$ in 2018, 776 million \$ in 2019 and 396 million \$ in 2020.
- The value of Mauritian exports to India in 2019 was 24 million \$ and 32 million \$ in 2020.
- Trade balance is in favour of India.

- The signing of CECPA between India & Mauritius can further improve trade relation. Mauritius was the third largest source of FDI into India during the financial year 2020-21, with FDI equity inflows amounting to USD 5.63 billion.

Developmental relations:

- India and Mauritius signed a MoU in March 2015.
- The main focus of the pact was the development of island of Agalega, some 1,122 km north of Mauritius.
- In total, India is planning to invest funds to the tune of \$ 18 million in all these developmental projects on Agalega Island.
- In January 2021, Modi and Jugnauth inaugurated the Social housing project, and laid the foundation stones for a civil service college and an eight MW solar PV Farm project.

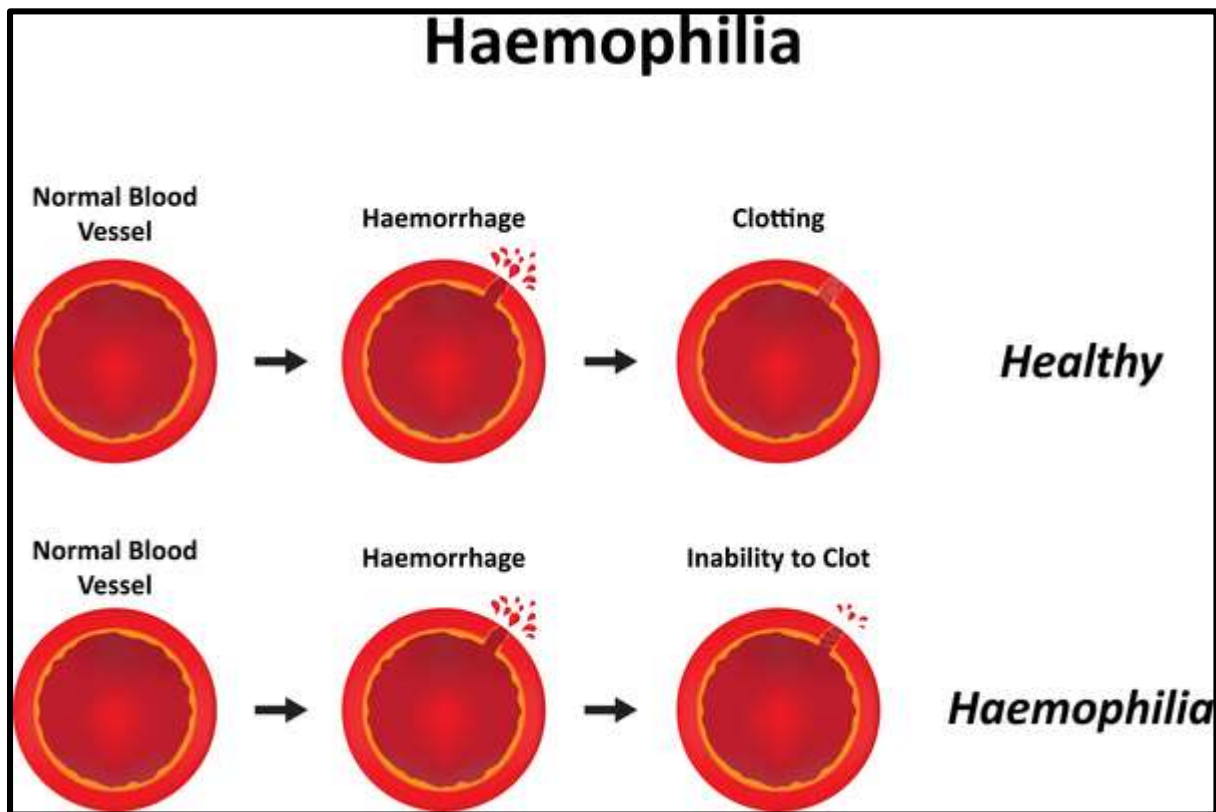
Two agreements were also exchanged:

- Extension of US\$ 190 million Line of Credit to Mauritius for the Metro Express and other infrastructure projects and MoU on the Implementation of Small Development Projects Security Relations: India is currently assisting Mauritius in constructing a dedicated dockyard to cater for a large number of vessels being inducted into the Mauritius Coast India in 2015, exported the first ever warship as an Offshore Patrol Vessel 'CGS Barracuda' to the Mauritius. India handed over 10 fast interceptor Boats to the National Coast Guard (NCG) of Mauritius under a line of credit agreement.
- In March 2022, Mauritius became the 4th member of the Colombo Security Conclave (CSC).
- The CSC was formed in 2011 as a trilateral maritime security grouping of India, Sri Lanka and the Maldives.

- It aims to increase the security cooperation, covering marine safety and security, human trafficking, counter-terrorism, and cyber security.
- **India's Assistance during Pandemic:** In May 2020, India launched Mission Sagar as part of the India's outreach initiative towards five Island nations in the Indian Ocean, which included Mauritius, amidst the ongoing COVID-19 pandemic.
- Under the mission, India provided food Items, COVID related Medicines with Medical Assistance Teams to these nations.
- Later in January 2021, India delivered the Made-in-India COVID-19 vaccines to Mauritius under the Vaccine Maitri Initiative.
- In August 2020, the Mauritius had declared a national emergency over an oil spill near it's coast.
- India promptly provided assistance to Mauritius in dealing with the situation.
- **Cultural Relations:** India's relationship with Mauritius is an imprint of Mauritian population of 1.3 million of which 68% are of Indian descent.
- India ranks fourth in the terms of the Mauritian students studying in overseas tertiary education institutions.
- Mauritius was granted, at 14th Pravasi Bhartiya Divas in January 2017, a special carve-out for issuing of OCI Cards to its nationals of Indian origin.
- Under this initiative, restriction on the number of generations was waived off.
- Mauritius introduced a visa-free regime for the Indian tourists in October 2004, whereby the Indian tourists visiting Mauritius for a period up to thirty days don't require a visa.

Topic 17. HAEMOPHILIA

Importance for Prelims: Science & tech



Every year, World haemophilia Day is observed on April seventeen to increase awareness of haemophilia and other bleeding disorders, in order to confirm better diagnosis and better access to care for the millions who remain without treatment.

This year, the theme for World Haemophilia Day is “Access for All: Partnership. Policy. Progress. engaging your government, integrating inherited bleeding disorders into national policy”.

What Is Haemophilia?

- Haemophilia is typically an inherited bleeding disorder in which the blood doesn't clot properly, which can lead to spontaneous bleeding as well as bleeding following injuries or surgery.
- Many proteins are present in the blood which might help stop bleeding.. These proteins are called clotting factors.
- Haemophilia is a sex-linked recessive disease.

- Thus, it shows transmission from an unaffected carrier female (heterozygous individual) to some of the male progeny.
- A single cut in the affected individual will result in nonstop bleeding. Due to the presence of defective forms of blood clotting factors, the exposed blood of affected individuals fails to coagulate.
- **Sex Linked Disease:** The sex of an individual is determined by a pair of “sex chromosomes” (a chromosome is a DNA molecule that contains genetic information).
- Females are identified with an XX pair of sex chromosomes, and males with an XY pair.
- When an x chromosome from the mother pairs up with the father’s x chromosome, the offspring is XX (female); when an x chromosome from the mother pairs up with with the father’s Y chromosome, the offspring is XY (male).
- Haemophilia is caused by a defect in the x chromosome.
- If a girl is born with one defective X chromosome, her other X chromosome can compensate for it.
- In such a case, she is a carrier of haemophilia but will not suffer from the condition herself.
- Only if both her X chromosomes are defective will she suffer from haemophilia herself.
- On the opposite hand, if a boy is born with a defective x chromosome, he doesn't have the second x chromosome to compensate for it, and can suffer from haemophilia.
- That is the reason haemophilia is more common among men.
- The possibility of a female becoming haemophilic is extremely rare because the mother of that individual has to be at least a carrier, and the father should be haemophilic.

- This is often rarely possible because a haemophilic male becomes unviable in the later stage of his life.
- Also, a haemophilic female dies before the birth.
- Types Of Haemophilia There are several types of haemophilia.
- The two most common forms of the disease are Haemophilia A and Haemophilia B. Haemophilia A, also known as Classic haemophilia , is caused by a lack of or decrease in clotting factor VIII.
- Haemophilia B, also called Christmas Disease, is caused by a lack of or decrease in clotting factor IX.
- Haemophilia A is more severe than Haemophilia B.
- A person with haemophilia a cannot synthesise a normal blood protein known as antihaemophilic globulin (AHG) needed for normal blood clotting.
- Thus, even a very little cut might lead to continuous bleeding for a long time.
- In a person with Haemophilia B or Christmas Disease, blood protein plasma thromboplastin is absent.

What Are The Signs And Symptoms Of Haemophilia?

- The common signs and the symptoms of the haemophilia include bleeding of the mouth and gums, bleeding after circumcision, bleeding in the urine or stool, and bleeding after having shots, among others.

Why Is Haemophilia Also Known As ‘Royal Disease’?

- Haemophilia is also called ‘royal disease’ because it affected the royal families of England, Germany, Russia, and Spain in the nineteenth and twentieth centuries.
- The family pedigree of Queen Victoria, who ruled England from 1837 to 1901, shows a number of haemophilic descendants as she was believed to have been the carrier of Haemophilia B.

- The disease was carried through various royal family members for three generations after Queen Victoria, and subsequently disappeared.
- **Haemophilia in India:** It is a rare disorder worldwide — one type, called Haemophilia A, occurs in about 1 in 5,000 births, while Haemophilia B is even rarer at about 1 in about 20,000 births.
- A vast number of cases, however, are believed to go unreported, particularly in India.
- According to the world Federation of Haemophilia's Annual global Survey 2017, released in october 2018, there have been over 1.96 lakh persons living with haemophilia across the world in 2017.
- In the country-wise data, India emerges with the highest count at nearly 19,000.

Topic 18. OIL BONDS

Importance for Prelims: Economy

TABLE 1

OIL BONDS NDA INHERITED

DETAILS (INTEREST RATE, DATE OF MATURITY)	PRINCIPAL (₹ cr)
7.61% GOI spl. Bonds,2015*	1,750.00
7.59% GOI spl. Bonds,2015*	1,750.00
8.13% GOI spl. Bonds,2021*	5,000.00
7.75% GOI spl. Bonds,2021*	5,000.00
8.20% GOI spl. Bonds,2023	22,000.00
8.01% GOI spl. Bonds,2023	4,150.00
8.20% GOI spl. Bonds,2024	5,000.00
8.20% GOI spl. Bonds,2024	10,306.33
6.35% GOI spl. Bonds,2024	22,000.00
7.95% GOI spl. Bonds,2025	11,256.92
8.40% GOI spl. Bonds,2025	9,296.92
8.40% GOI spl. Bonds,2026	4,971.00
6.90% GOI spl. Bonds,2026	21,942.00
8.00% GOI spl. Bonds,2026	10,000.00
TOTAL	1,34,423.17

*These bonds have been paid in full (total paid ₹13,500 crore)

CHART 1

ANNUAL INTEREST PAYMENT ON OIL BONDS (₹ cr)

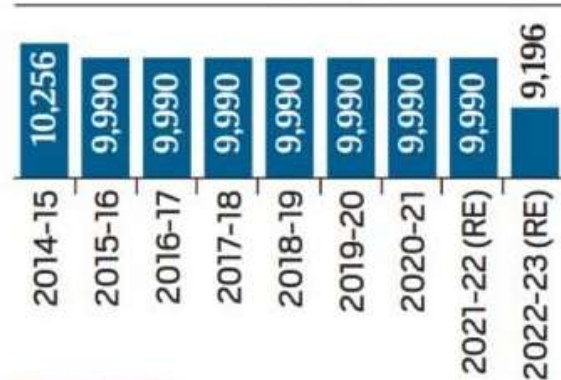


CHART 2

CONTRIBUTION OF OIL SECTOR TO EXCHEQUER (₹ cr)



The finance minister has said the govt. cannot bring down taxes – and therefore oil costs – because it's to pay for oil bonds issued by the UPA. From 2015 to 2021, the govt. has been fully paid off four sets of oil bonds — a total of Rs 13,500 crore. As of March 31, 2021, there was Rs 1.31 trillion in outstanding principal and Rs 37,340 crore in interest yet to be repaid on these oil bonds, she said.

How much of fuel prices is tax?

- There are 2 components to the domestic retail price — the price of crude oil itself, and also the taxes levied on this basic price. The taxes vary from one product to another.
- For instance, as of now, taxes account for 50% of the total retail price for a litre of petrol, and 44% for a litre of diesel.
- **Oil bonds:** Previously, Petrol and diesel prices were fixed by the government to cushion consumers from price shocks and if crude oil prices were high, oil refining and marketing companies would technically sell petrol and diesel at retail outlets at a loss.
- The government, however, compensated oil companies by issuing long-term bonds that they could redeem later.
- Thus, these bonds are, in essence, promissory notes of deferred payment of subsidies that the government owes to OMCs.
- An oil bond is an IOU, or a promissory note issued by the government to the Oil Marketing Companies (OMCs), in lieu of cash the government would have given them so that these companies don't charge the public the full price of the fuel.
- There are two components of oil bonds that need to be paid off: the annual interest payment, and the final payment at the end of the bond's tenure.
- By issuing such bonds, a government will defer the full payment by five or ten or twenty years, and in the interim just pay the interest costs.
- **For example-** an oil bond says the govt. will pay the oil marketing company the sum of, say, Rs 1,000 crore in ten years.
- And to compensate the OMC for not having this money straight away, the government will pay it, say, 8% (or Rs 80 crore) each year until the bond matures.
- **Purpose:** therefore, by issuing such oil bonds, the govt. of the day is able to protect/ subsidise the consumers without either ruining the profitability

of the OMC or running the profitability of the OMC or running a huge budget deficit itself.

- **Conclusion:** Issuing bonds pushes the liability on the future generation.
- But to a great extent, most of the government's borrowing is in the form of bonds.
- **However some measures should be taken while issuing bonds:** The fiscal deficit (which is essentially the level of government's borrowing from the market) should be keenly tracked

- The most wisdom whereas issuing bonds is for a government to employ this tool towards increasing the productive capacity of the economy.

Deregulation of Oil prices

- The first step towards deregulation was taken in 2010 with the announcement that oil bonds are going to be discontinued, and OMCs are going to be paid in cash.
- In June 2010, petrol costs were deregulated, mirroring the market value of crude.
- The government freed diesel prices in October 2014.
- In June 2017, India adopted the system of the dynamic fuel pricing where the retail price of petrol and diesel fluctuate on a daily basis.
- Fiscal Deficit Fiscal deficit is the difference between the government's total expenditure and its total receipts excluding borrowing
Gross fiscal deficit = Total expenditure – (Revenue receipts + Non-debt creating capital receipts)
- The fiscal deficit can have to be financed through borrowing.
- Thus, it indicates the total borrowing requirements of the govt. from all sources.
- From the financing side
Gross fiscal deficit = Net borrowing at home + Borrowing from RBI + Borrowing from abroad
Net borrowing at home

includes that directly borrowed from the public through debt instruments (for example, the various small savings schemes) and indirectly from commercial banks through Statutory Liquidity ratio (SLR).

- From the way gross fiscal deficit is measured as given above, it can be seen that revenue deficit may be a part of fiscal deficit
$$\text{Fiscal Deficit} = \text{Revenue Deficit} + \text{Capital Expenditure} - \text{non-debt creating capital Receipts}$$
- A large share of revenue deficit in fiscal deficit indicated that a large part of borrowing is being used to meet its consumption expenditure needs rather than investment.

Topic 19. FRACTIONAL SHARES

Importance for Prelims: Economy

Fractional Share

Example



The Company Law Committee, formed by the Ministry of Corporate Affairs, has recommended various measures, including the issuance of fractional shares, restricted stock units (RSUs) and stock appreciation rights (SARs), besides allowing companies to hold shareholders meetings in hybrid mode to boost ease of doing business and improve liquidity in the market.

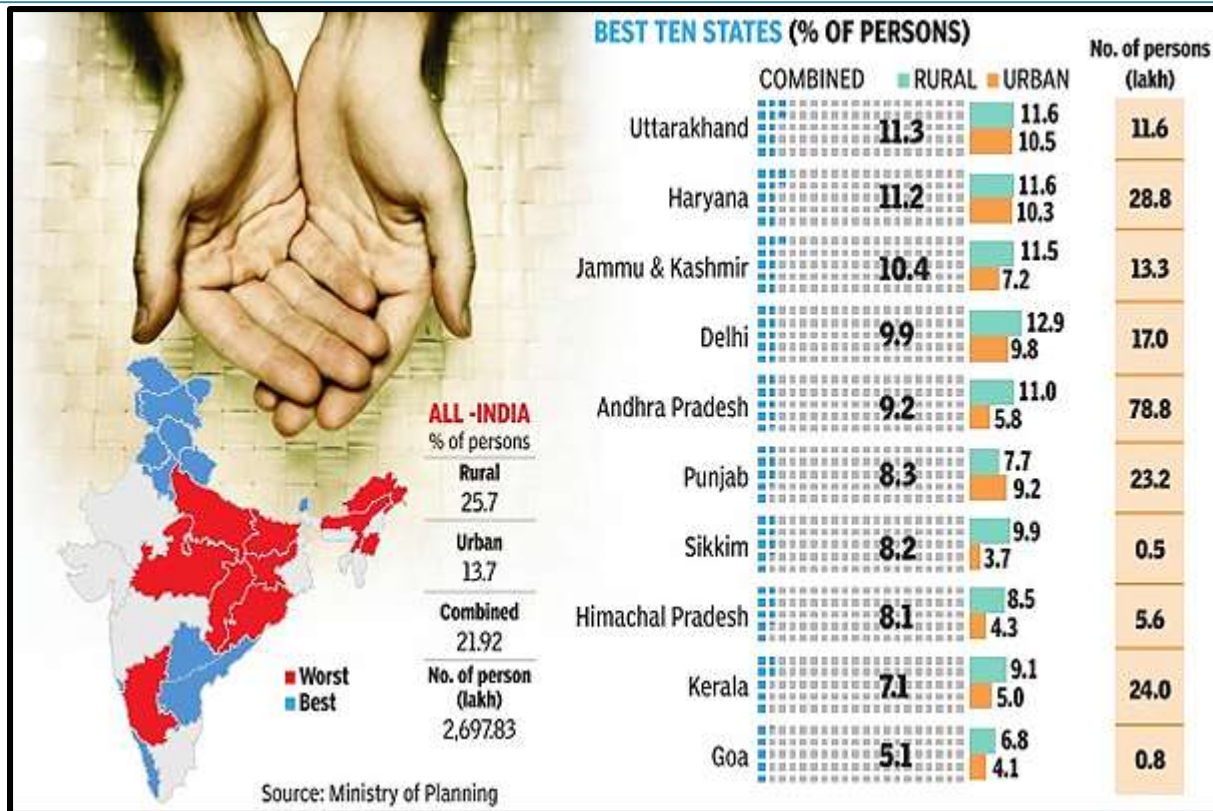
- A fractional share It refers to a portion of a share less than one. It will be the enable retail investors to own a part of the highly-priced share at a fraction of the cost.
- For example, instead of spending close to spending,459 to buy one share of MRF — the highest priced share in India — an investor will invest just just or ₹1,000 to own the part of the company share.
- Restricted Stock Units The term restricted stock unit (RSU) refers to a form of compensation issued by an employer to an employee in the form of company shares.
- Restricted stock units are issued to employees through a vesting plan and distribution schedule after they achieve required performance milestones or upon remaining with their employer for a particular length of time.

Unlike stock options or warrants, RSUs can always have some value based on the underlying shares.

- Stock Appreciation Rights Stock Appreciation Rights is a scheme under which the participants, being directors, officers or employees of the company, are entitled to receive cash on account of appreciation in stock prices of the company, subject to fulfillment of certain vesting conditions.
- It is a deferred compensation tied to the company's stock performance.
- They give employees the right to the monetary equivalent to the appreciation in the value of a specified number of shares over a fixed period.
- The cash to be paid is calculated on the basis of the Intrinsic value of the SARS, being the difference between the grant price(fair market price on the date the appreciation rights were granted) and therefore the fair market value of the shares as on the exercise date.

Topic 20. POVERTY ESTIMATE

Importance for Prelims: Economy



Extreme poverty in India has declined by over twelve percentage points throughout 2011-2019, a world bank working paper has said.

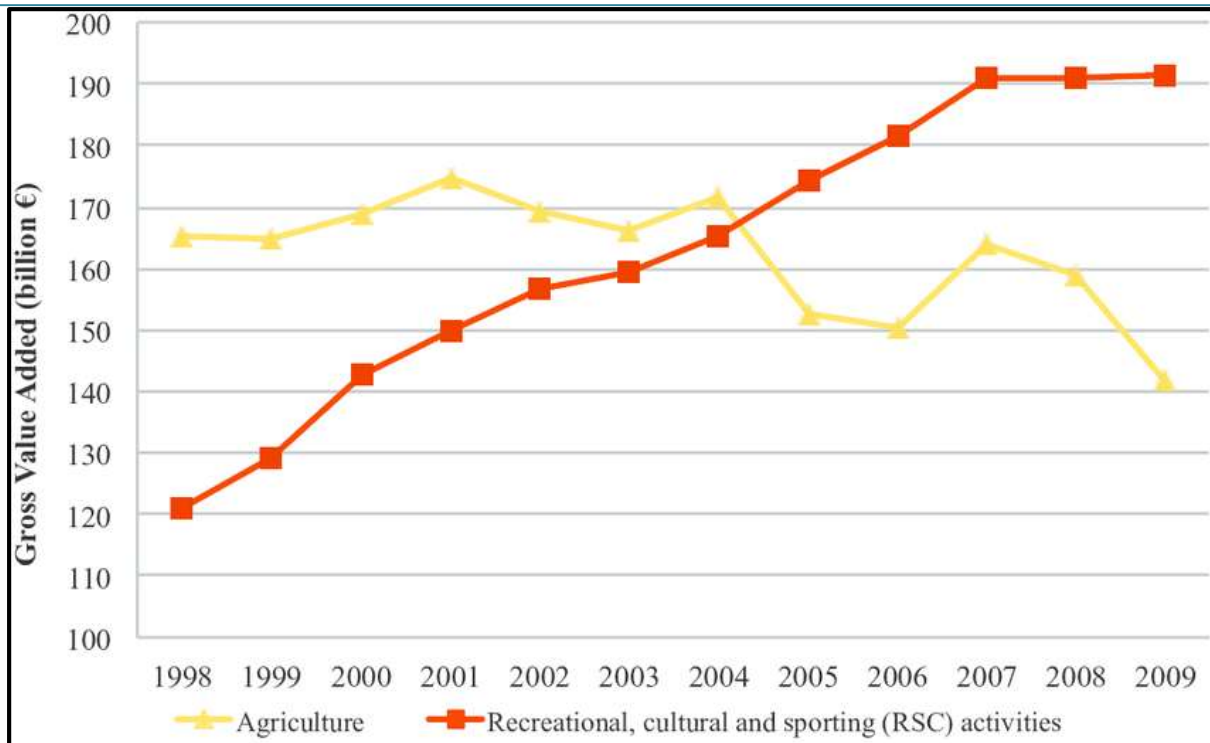
- **Details:** Extreme poverty was as low as 0.8 per cent in the pre-pandemic year of 2019, and food transfers were instrumental in ensuring that it remained at that level in the pandemic year 2020.
- Extreme poverty is measured as the number of people living on less than \$1.90 per day (Rs 144.40 at Rs 76 a dollar).
- The poverty head-count rate was 10.2 percent in 2019, down from 22.5 percent in 2011 Poverty reduction was higher in rural areas (down from 26.3 to 11.6 per cent between 2011 and 2019) than in the urban areas (from 14.2 to 6.3 percent).
- Consumption inequality in the India has been moderated after 2011, with almost no change between 2015 and 2019 as farmers with small landholding sizes have experienced higher income growth.

- Urban poverty rose by two percentage points in 2016 (coinciding with demonetisation) and rural poverty rose by ten basis points in 2019 (coinciding with a slowdown in the economy).
- **Poverty Estimation:** A common method used to estimate poverty in India is based on the income or consumption levels and if the income or consumption falls below a given minimum level, then the household is said to be Below the poverty line (BPL).
- poverty estimation in the India is now carried out by the NITI Aayog's task force through the calculation of poverty line based on the information captured by the National Sample Survey office under the Ministry of Statistics and Programme Implementation (MOSPI).
- **Data Collection Methods:** Uniform Resource Period (URP): Up until 1993-94, the poverty line was based on URP data, which involved asking people about their consumption expenditure across a 30-day recall period, that is the information was based on the recall period, that's the data was based on the recall of consumption expenditure in the previous thirty days.
- **Mixed Reference Period (MRP):** From 1999-2000 onwards, the NSSO switched to an MRP method that measures consumption of 5 low-frequency items (clothing, footwear, durables, education and institutional health expenditure) over the previous year, and all other items over the previous thirty days.
- That is to say, for the five items, survey respondents are asked about consumption in the previous one year.
- For the remaining items, they are asked about consumption in the previous 30 days.
- **Various Committees:** VM Dandekar and N Rath (1971), made the first systematic assessment of poverty in India, based on National Sample Survey (NSS) data.

- **Alagh Committee (1979):** Task force constituted by the Planning Commission under the chairmanship of YK Alagh, constructed a poverty line for rural and urban areas on the basis of nutritional requirements and related consumption expenditure.
- **Lakdawala Committee (1993):** Task Force chaired by DT Lakdawala, based on the assumption that the basket of goods and services used to calculate consumer price Index-Industrial workers (CPI-IW) and consumer price Index- Agricultural Labourers (CPI-AL) reflect the consumption patterns of the poor.
- **Tendulkar Committee** – Expert group constituted by the planning Commission and, chaired by Suresh Tendulkar, was constituted to review methodology for poverty estimation. **Rangarajan Committee** –The committee was set up in the backdrop of national outrage over the Planning Commission’s suggested poverty line of ₹22 a day for rural areas.

Topic 21. AGRI GVA

Importance for Prelims: Economy



According to NITI Aayog, India will expect another good year of agriculture growth if the monsoon is normal as predicted. This, along with high commodity costs, might bring growth in agriculture GVA to four per cent.

Sectoral share of the GVA:

- Agriculture- Least impacted by pandemic related disruption, grew at 3.6% in 2020- 21 and projected to grow at 3.9% in 2021-2022.
- Industry- Though contracting by 7% in 2020-21, it is projected to expand by 11.8% in 2021-22 Service- Services account for more than half of the Indian economy and was the most impacted by the COVID19 related restriction, especially for the activities that require human contact. This sector contracted by 8.4% in 2020-21, however estimated to grow at 8.2% in 2021-22. Share of sectors in nominal GVA (%) Sectors 2019-20 2020-21 2021-22 (Estimated) Agriculture 18.4 20.2 18.8 Industry 26.7 25.9 28.2 Services 55.0 53.9 53.0
- **Agri GVA:** The agriculture sector has experienced buoyant growth in the past two years.

- The sector, which is the largest employer of workforce, accounted for a sizable 18.8 per cent (2021- 22) in Gross Value Added (GVA) of the country registering a growth of 3.6 per cent in 2020-21 and 3.9 per cent in 2021-22.
- Growth in allied the sectors including livestock, dairying and the fisheries has been the major drivers of overall growth in the sector.
- Percentage Share of GVA of Agriculture & Allied Sector to Total GVA (at current prices)
- The share of the sector in total GVA of the economy has a long-term trend of around 18 per cent, improving to 20.2 per cent in the year 2020-21 and 18.8 per cent in 2021-22.
- Growth of Agriculture and Allied Sectors (per cent) Gross Value Added (GVA) In 2015, India opted to make major changes to its compilation of national accounts and decided to bring the whole process into conformity with the united nations System of National Accounts (SNA) of 2008.
- As per the SNA, GVA is defined as the value of output minus the value of intermediate consumption and is a measure of the contribution to growth made by an individual producer, industry or sector.
- It provides the rupee value for the number of goods and services produced in an economy after deducting the price of inputs and raw materials that have gone into the production of those goods and services.
- $\text{Gross Value Added} = \text{GDP} + \text{subsidies on products} - \text{taxes on products}$
Earlier, India had been measuring GVA at ‘factor cost’ till the new methodology was adopted in which GVA at the ‘basic prices’ became the primary measure of economic output.
- GVA at basic prices will include production taxes and exclude production subsidies.
- GVA at factor cost included no taxes and excluded no subsidies.

Topic 22. GURU TEGH BAHADUR

Importance for Prelims: Art & Culture

The government can celebrate the four-hundredth birth anniversary of Guru Tegh Bahadur with a two-day event at the Red Fort.

About Guru Tegh Bahadur (1621–1675):

- Guru Tegh Bahadur was the ninth of 10 Gurus of the Sikh religion. He was born at the Amritsar in 1621 and was the youngest son of Guru Hargobind. His term as the Guru ran from 1665 to 1675.
- His one hundred fifteen hymns are included in Sri Guru Granth Sahib, the main text of Sikhism.
- He was originally named Tyag Mal but was later renamed Tegh Bahadur after his gallantry and bravery in the wars against the Mughal forces.
- He built the city of Anandpur Sahib.
- Guru Tegh Bahadur was executed on the orders of Aurangzeb, the sixth Mughal emperor, in Delhi.
- Sikh holy premises Gurudwara Sis Ganj Sahib and Gurudwara Rakab Ganj Sahib in Delhi mark the places of execution and cremation of Guru Tegh Bahadur respectively.
- He is fondly remembered as ‘Hind di Chadar’.

Topic 23. EAST TIMOR

Importance for Prelims: Geography



East Timor, also known as Timor Leste, holds the second and final round of its presidential election on Tuesday, with frontrunner and Nobel laureate Jose Ramos-Horta running against incumbent leader Francisco “Lu Olo” Guterres.

- **History:** The territory was colonised by Portugal in the eighteenth century and remained under its control till 1975.
- When the Portuguese withdrew, troops from Indonesia invaded and annexed East Timor as its 27th province.
- The East Timorese voted for independence in a 1999 UN-supervised referendum, however that unleashed even more violence till peace-keeping forces were allowed to enter.

- The country was officially recognised by the United Nations in 2002. East Timor has applied to be a member of the Association of Southeast Asian Nations (ASEAN).
- **It currently holds observer status. Geography:** East Timor comprises the eastern half of Timor island, the western half of which is part of Indonesia.
- It spans a 15,000 sq. km (5,792 sq. mile) land area – slightly smaller than Israel – and it's 1.3 million people are predominantly Roman Catholic.
- located in between southeast asia and oceania, the island of timor is part of Maritime southeast asia, and is that the largest and eastmost of the Lesser sunda islands.
- To the north of the island are the Ombai Strait, Wetar Strait, and the greater Banda Sea.
- The Timor Sea separates the island from Australia to the south.

Topic 24. GST RATES RATIONALISATION

Importance for Prelims: Economy

Rejigging rates | The current GST regime with four key tax slabs can be smoothly replaced by a three-rate structure without the exchequer losing revenues, says study

CURRENT GST RATE STRUCTURE	POSSIBLE REVENUE-NEUTRAL RATES
5%	8%
12%	15% (merging the 12% and 18% slabs)
18%	
28% (for demerit goods)	30%
Total rates - 8	Total rates - 7 (assumes no changes in special rates)

The group of Ministers (GoM) can deliberate and finalise recommendations which will be sent to the GST Council, headed by finance minister Nirmala Sitharaman and comprising state finance ministers.

- There was a thought in some quarters that the slab of five per cent could also be broken into three per cent and eight per cent, and also the remaining slabs of 12, 18 and 28 per cent will continue.
- **GST Council:** It is a constitutional body under Article 279A.
- It makes recommendations to the Union and state government on issues related to goods and service Tax and was introduced by the Constitution (One Hundred and 1st Amendment) Act, 2016.
- The GST Council is chaired by the Union finance minister and other members are the Union State Minister of Revenue or Finance and Ministers in-charge of Finance or Taxation of all the States.
- It is considered as a federal body where both the centre and the states get due representation.

- Every decision of the Goods and Services Tax Council shall be taken at a meeting by a majority of not less than three-fourths of the weighted votes of the members present and voting, in accordance with the following principles, namely: the vote of the Central Government shall have a weightage of 1 third of the total votes cast, and also the votes of all the State Governments taken together shall have a weightage of two-thirds of the total votes cast, therein meeting.

Topic 25. RESILIENCE AND SUSTAINABILITY TRUST

Importance for Prelims: Economy

- The executive Board of the International monetary fund (IMF) approved the establishment of the Resilience and sustainability Trust (RST) to help

countries build resilience to external shocks and ensure sustainable growth, contributing to their longterm balance of payments stability.

- **Resilience and Sustainability Trust:** On April 13, 2022, the Executive Board of the International Monetary Fund (IMF) approved the establishment of the Resilience and Sustainability Trust (RST) with effect from May 1, 2022.
- The RST will complement the IMF's existing lending toolkit by focusing on longerterm structural challenges— including climate change and pandemic preparedness— that entail significant macroeconomic risks and where policy solutions have a strong global the public good nature .
- It'll channel Special Drawing Rights (SDRs) contributed by countries with strong external positions to countries wherever the needs are the greatest, providing policy support and affordable longer-term financing to strengthen the members' resilience and the sustainability and thereby contributing to prospective balance of payments stability.
- The RST will be a loan-based trust, with the resources mobilized on a voluntary basis.
- About 3 quarters of the IMF's membership will be eligible for longer-term affordable financing from the RST, as well as all low-income countries, all developing and vulnerable little states, and lower middle-income countries.
- Access will be based on the countries' reforms, strength and debt sustainability considerations and capped at the lower of 150 percent of quota or SDR 1 billion.
- The loans will have a 20-year maturity and a 10½-year grace period, with borrowers paying an rate of interest with a modest margin over the three-month SDR rate, with the most concessional financing terms provided to the poorest countries.

- The RST can stand ready to the commence lending operations once a critical mass of resources from a broad base of contributors is achieved and once sufficiently robust financial systems and processes are in place, that is anticipated to occur by the end of the year.
- Fundraising toward the estimated total resource needs of about SDR thirty three billion (equivalent to US\$45 billion) are going to be initiated immediately.

Topic 26. EXTERNAL BENCHMARK LENDING RATE

Importance for Prelims: Economy



The reserve bank of India's (RBI) endeavor to improve monetary transmission to banks' lending rates has gained traction with the advent of EBLR regime

Transmission of Monetary Policy:

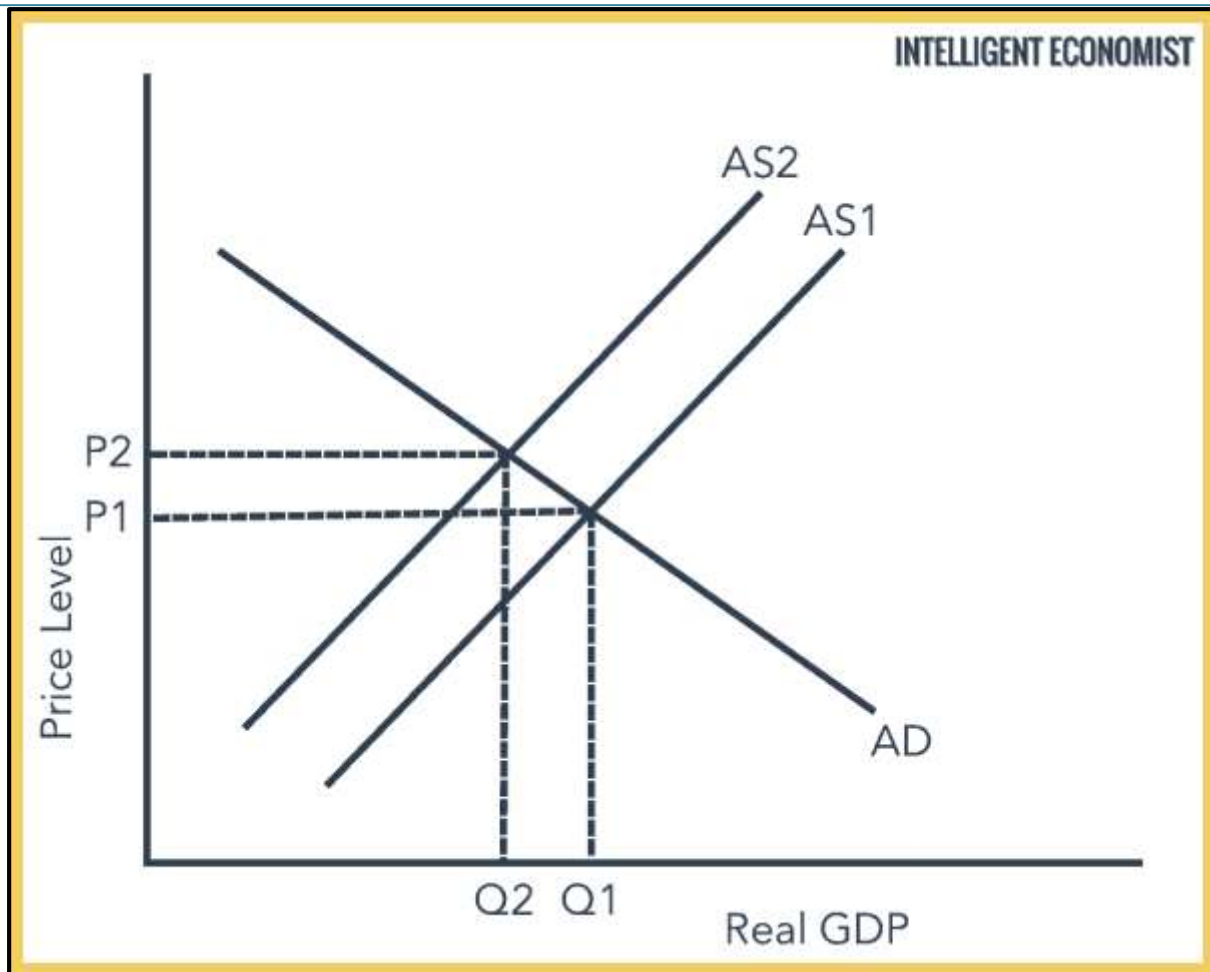
- The transmission of monetary policy describes how changes made by the reserve bank to its monetary policy settings flow through to economic activity and inflation.
- This process is complex and there is a large degree of uncertainty about the timing and size of the impact on the economy.
- In simple terms, the transmission can be summarized in two stages.
 1. Changes to the monetary policy affect interest rates in the economy.
- Changes to interest rates have an effect on economic activity and inflation.
- Reserve bank of india measures to strengthen monetary policy transmission: Internal Benchmark lending Rate (IBLR): the internal Benchmark lending Rates are a group of reference lending rates that are calculated after considering factors like the bank's current financial overview, deposits and non performing assets (NPAs) etc.
- BPLR, Base rate, MCLR are the examples of Internal Benchmark Lending Rate.

- Benchmark Prime Lending Rate (BPLR)-BPLR was used as a benchmark rate by banks for lending till June 2010. Under it, bank loans were priced on the actual cost of funds.
- However, the BPLR was subverted, resulting in an opaque system.
- The bulk of wholesale credit (loans to corporate customers) was contracted at sub-BPL rates and it comprised nearly 70% of all bank credit.
- Under this system, banks were subsidising company loans by charging high interest rates from retail and small and medium enterprise customers.
- **Base Rate:-**Loans taken between June 2010 and April 2016 from banks were on base rate.
- During the period, base rate was the minimum interest rate at which commercial banks could lend to customers.
- Base rate is calculated on 3 parameters — the cost of funds, unallocated price of resources and return on net worth.
- Hence, the rate depended on individual banks and they changed it whenever their cost of funds and other parameters changed.
- **Marginal Cost of Lending Rate (MCLR):** It came into effect in April 2016.
- It's a benchmark lending rate for floating-rate loans.
- This is the minimum interest rate at which commercial banks can lend.
- This rate is based on four components—the marginal cost of funds, negative carry on account of cash reserve ratio, operating costs and tenor premium. MCLR is linked to the actual deposit rates.
- Hence, when deposit rates rise, it indicates the banks are likely to hike MCLR and lending rates are set to go up.
- **Issues Related to IBLR Linked Loans:** The problem with the IBLR regime was that when RBI cut the repo and reverse repo rates, banks did not pass the full benefits to borrowers.

- In the IBLR linked Loans, the rate of interest has been many variables as well as bank's spread, their current financial overview, deposits and non performing assets (NPAs) etc.
- Because of this, such internal benchmarks did little to facilitate any swift change in interest rates as per changes in reserve bank of india repo rate policy.
- The opacity in the interest rate setting processes under the internal benchmark regime hinders transmission to the lending rates.
- • External Benchmark lending Rate-To ensure complete transparency and standardization, reserve bank of india mandated the banks to adopt a uniform external benchmark within a loan category, effective first October, 2019.
- Unlike MCLR which was internal system for each bank, RBI has offered banks the options to choose from 4 external benchmarking mechanisms:
The RBI repo rate
- The 91-day T-bill yield
The 182-day T-bill yield
Any other benchmark market interest rate as developed by the Financial Benchmarks India Pvt. Ltd.
- **Benefits:** Banks are free to decide the spread over the external benchmark.
- However, the interest rate must be reset as per the external benchmark at least once every three months.
- Being an external system, this means any policy rate cut decision can reach borrowers faster.
- The adoption of external benchmarking will make the interest rates transparent.
- The borrower will also know the spread or profit margin for each bank over the fixed interest rate making loan comparisons easier and more transparent.

Topic 27. COST-PUSH INFLATION

Importance for Prelims: Economy



It is “supply-side, cost-push” factors which affect the costs of most of the items constituting the CPI. The clear worry is that the recent monetary Policy Committee move could potentially raise costs for all borrowers and lead to further price will increase.

Cost-Push Inflation:

- Cost push inflation is inflation caused by an increase in prices of inputs like labour, raw material, etc.
- The increased price of the factors of production leads to a decreased supply of these goods.
- Whereas the demand remains constant, the prices of commodities increase causing an increase in the overall price level.
- Apart from rise in prices of inputs, there could be other factors leading to supply side inflation such as: Natural disasters or depletion of natural

resources, Monopoly-single seller selling limited goods at comparatively higher price.

- Government regulation or taxation- especially indirect tax that raises price of commodity Change in exchange rates-currency devaluation or depreciation making imports expensive Imported inflation-rise in price of imported goods Generally, cost push inflation may occur in case of an inelastic demand curve where the demand cannot be easily adjusted according to rising prices. Cost-Push vs.
- **Demand-Pull Inflation:** Cost-push is one of the two causes of inflation. The other is demand-pull inflation.
- Demand- pull inflation is that the primary cause of inflation.
- It occurs when the aggregate demand for a good or service outstrips aggregate supply, and it starts with an increase in consumer demand. Sellers try to meet the higher demand with the more supply.
- If they can't, then they raise their prices.

Topic 28. DEMOLITION DRIVES VIOLATE INTERNATIONAL LAW

Importance for Prelims: Polity

Communal clashes broke out during Ram Navami processions in several parts of the country including at Khargone in Madhya Pradesh Subsequently, the Madhya Pradesh government bulldozed the houses of these who were allegedly involved in rioting.

- The State government claims that these demolitions are in response to illegal encroachments.
- This idea of serving ‘justice’, quick and cold, through bulldozers emanated in Uttar Pradesh.
- In the wake of protests against the Citizenship (Amendment) Act, 2019 the Uttar Pradesh government passed orders to recover damages from those who were allegedly involved in destroying public property.
- This process has been further institutionalised through the enactment of the Uttar Pradesh Recovery of Damages to Public and Private Property Act, 2020.
- **Right to adequate housing:** The right to housing is not only a fundamental right recognised under Article 21 of the Indian Constitution, it is also a well-documented right under the international human rights law framework, which is binding on India.
- For instance, Article 25 of the Universal Declaration of Human Rights (UDHR) states that “everyone has the right to a standard of living adequate for the health and well-being of himself and of his family, as well as the food, clothing, housing and the medical care...”.
- Likewise, Article 11.1 of the International Covenant on the Economic, Social and the Cultural Rights (ICESCR) recognises “the right of everyone to an adequate standard of living for himself and his family, including adequate food, clothing and housing, and to the continuous improvement of living conditions”.

- Furthermore, under Article 11.1, countries are under an obligation to take the “appropriate steps” to ensure the realisation of those rights like the right to adequate housing.
- The rights recognised under ICESCR, according to Article four, can be restricted by States only if the limitations are determined by law during a manner compatible with the nature of these rights and solely to promote society’s general welfare.
- However, any limitation imposed on the rights given in the Covenant like the right to adequate housing cannot lead to the destruction of those rights.
- This is categorically recognised in Article 5 of ICESCR.
- Besides, international law also prohibits arbitrary interference in an individual’s right to property.
- For instance, Article twelve of the UDHR states that is “no one shall be subjected to arbitrary interference with his privacy, family, home or the correspondence, nor to attacks upon his honour and reputation”.
- Article twelve also stipulates that “everyone has the right to the protection of the law against such interference or attacks”.
- This same right is also provided under Article seventeen of the International Covenant on Civil and Political Rights (ICCPR).
- **Forced evictions:** According to the UN Human Rights Office, an integral element of the right to adequate housing is ‘protection against forced evictions’.
- • The bulldozing of the houses by the Madhya Pradesh government of the alleged rioters amounts to forced eviction and arbitrary interference with an individual’s home, therefore a breach of Article 11.1 of the ICESCR. This action will be defended under international law only if it will be shown that the forced eviction is as per the law and in conformity with the provisions of the human rights covenants.

- Also, other requirements like whether the state action was necessary and proportionate can have to be examined.
- If these demolitions were against the illegal encroachments, then did the authorities get the eviction order on the day of the riots, or did they have an eviction order earlier, but decided to act only after the riots?
- Judicial incorporation The Supreme court in cases like Bachan Singh vs State of Punjab, Vishaka vs State of Rajasthan, and recently in the famous Puttaswamy vs Union of India has laid down the principle that the fundamental rights guaranteed under the Constitution must be read and interpreted during a manner which would enhance their conformity with international human rights law.

Topic 29. INDIA'S CRUDE OIL IMPORTS FROM OPEC

Importance for Prelims: IR



OPEC's share of India's oil imports for the FY22 fiscal year remained almost steady year-on-year, arresting sharp declines over the past six years, as the refiners prefer crude from the West Asia to counter rising global prices.

- **India's crude oil imports from OPEC:** OPEC oil accounted for about 88% of India's crude imports in FY08.
- Its share of India's overall imports could decline because refiners in Asia's third largest economy are buying cheaper Russian oil.
- However, Russian oil continued to account for less than 1% of India's crude imports in FY22.

What is OPEC?

- OPEC stands for Organization of the Petroleum Exporting Countries.
- It is a permanent, intergovernmental organization, created at the Baghdad Conference in 1960, by Iran, Iraq, Kuwait, Saudi Arabia, and Venezuela.

- It aims to manage the supply of oil in an effort to set the price of oil in the world market, in order to avoid fluctuations that might affect the economies of both producing and purchasing countries.
- It is headquartered in Vienna, Austria.
- Organization of Petroleum-Exporting Countries membership is open to any country that's a substantial exporter of oil and which shares the ideals of the organization.
- Today Organization of Petroleum-Exporting Countries is a cartel that includes fourteen nations, predominantly from the middle east whose sole responsibility is to control prices and moderate supply. **What is OPEC+?**
- The non-OPEC countries that export crude oil along with the fourteen Organization of Petroleum-Exporting Countries are termed as OPEC and countries.
- OPEC plus countries include Azerbaijan, Bahrain, Brunei, Kazakhstan, Malaysia, Mexico, Oman, Russia, South Sudan and Sudan.
- Saudi arabia and Russia, both have been at the heart of a three-year alliance of oil producers called Organization of Petroleum-Exporting Countries plus — which now includes eleven Organization of Petroleum-Exporting Countries members and ten non-OPEC nations — that aims to shore up oil prices with production cuts.

Topic 30. UKRAINE WAR HAS HIT INDIA'S BID TO MOVE AWAY FROM COAL: FM

Importance for Prelims: Environment

According to minister of finance Nirmala Sitharaman, India's transition away from coal as a fuel are going to be hampered by the Russia-Ukraine war.

- **Panchamrit:** India's 5 Commitments On Climate Action At the CoP 26, India presented five nectar elements, Panchamrit, to deal with the issue of climate change.
- **These are:** India also raised India's Nationally Determined Contributions (NDCs) of achieving 450 giga watt non-fossil energy capacity to 500 giga watt by 2030.
- India will meet 50% of its energy requirements from renewable energy by 2030.
- India will reduce the total projected carbon emissions by one billion tonnes from now onwards till 2030.
- By 2030, India will reduce the carbon intensity of its economy by forty fifth. under Paris Agreement, India promised to reduce its emissions intensity (emissions per unit of GDP), by thirty three to thirty fifth by 2030 compared to 2005 levels.
- By the year 2070, India will achieve the target of Net Zero.
- **India's effort on the issue of climate mitigation:** India has reduced emissions intensity of GDP by 21% and is on track to achieve the goal of 35% emissions reduction as promised in Paris agreement. India, along with UK, launched 'Infrastructure for Resilient Island States' (IRIS) on the side-lines of the COP 26 climate summit in Glasgow.
- IRIS is a a part of the Coalition for Disaster Resilient Infrastructure (CDRI). India has the leapfrogged from BS IV to BS VI for vehicle emission norms.
- India has promised creation of additional carbon sinks of 2.5 to 3 billion tons of carbon equivalent through increasing green cover.

- In last 5 years, India's green cover has increased by 15,000 sq. km.
- India has taken up a target for restoration of 26 million of degraded land by 2030 during the 14th COP of UN Convention to Combat Desertification in Delhi India launched National Action plan on global climate change (NAPCC) in 2008 outlining eight National Missions on climate change.
- **These include:** National Solar Mission National Mission for Enhanced Energy Efficiency National Mission on Sustainable Habitat National Water Mission National Mission for Sustaining the Himalayan Eco-system National Mission for a Green India National Mission for Sustainable Agriculture National Mission on Strategic Knowledge for Climate Change Indian Railways, the world's largest passenger carrier serving an average of 8 billion passengers every year, has set a 'Net Zero by 2030' With this decision, the Indian Railways will mitigate 60 million tonnes of carbon emission per year.
- India is working on the target of 20% ethanol blending in petrol by 2025.
- Today India is one among the top 5 countries in the world in terms of renewable energy capability.
- Challenges Ahead to Meet COP 26 Goals Paris agreement targets still unachieved Although 151 states have indicated that they will submit stronger targets before December 31, only 13 of them, covering 2.4% of global emissions, have submitted such targets.
- For many there's a mismatch between short-term actions and long-term commitments.
- States are not obliged to achieve their self-selected targets and there is no mechanism to review the adequacy of individual contributions.
- No rules have yet been set for carbon credits & developing countries has several millions of them unsold Climate finance A NITI Aayog report estimates that the sector requires \$4.5 trillion to meet the infrastructure gap and increase the share of renewable energy to 50% by 2030.

- **Way Forward:** Achieving these targets will require focus on three important areas: Increasing renewable energy capacity, decarbonising emission intensive sectors and creating more carbon sinks.
- **Policies and investments shift from the grey to green economy:** It would require India to give up fossil fuel and making societies and people more resilient to climate shocks.

Topic 31. CHINA SOLOMON ISLANDS SIGN LANDMARK SECURITY AGREEMENT

Importance for Prelims: IR



China has announced the signing of a security treaty with the solomon Islands.

About The Agreement:

- Chinese Foreign Minister and Minister of Foreign Affairs of the Solomon Islands signed an intergovernmental framework agreement on security cooperation.
- It's a first-of-its-kind arrangement that could pave the way for further Chinese security deals overseas.
- Key highlights of the framework agreement Under the agreement, the two sides will conduct cooperation in various areas such as: These two countries will cooperate in an effort to help solomon Islands strengthen capacity building in safeguarding its own security.

- The Solomon Islands explained that there was no agreement for a Chinese military base.
- **Concerns raised by western countries:** Officials from the United States, Australia, Japan and New Zealand expressed concerns about the proposed security framework.
- They fear that the agreement may open the door to a Chinese naval base in the country and thence pose serious risks to a free and open Indo-Pacific.
- Experts believe that signing such an agreement could actually increase destabilisation within the Solomon Islands.
- Also, it could set a concerning precedent for the wider Pacific Island region.
- **About Soloman Islands:** Solomon Islands is a country in the southwestern Pacific Ocean.
- Once a British protectorate, solomon Islands achieved independence as a republic in 1978.
- Honiara, on the north coast of Guadalcanal Island, is Solomon Islands' capital and largest city.
- **There are six big islands** – the largest is Guadalcanal.
- The others are New Georgia, Santa Isabel, Choiseul, Malaita, and San Cristobal.
- Solomon Island in particular has significant reserves of timber and mineral resources, along with fisheries.
- These Pacific island states have disproportionately large maritime Exclusive Economic Zones when compared to their small sizes.

Great geo-strategic significance:

- The Solomon Islands has great strategic significance as was evident during the World War II (WW II).

- During the WW II, it served as a bulwark for Australia against the advancing Japanese.
- • The Solomon Islands also sits on critical shipping routes, that means China may potentially control maritime traffic in and round the region.
- **Role of Taiwan:** Competition for diplomatic recognition Any country that has got to officially establish relations with China can have to break diplomatic ties with Taiwan.
- The solomon Islands was one of the six Pacific island states which had official bilateral relations with Taiwan.
- However, in 2019, the Solomon Islands, along with Kiribati, switched allegiance to China.
- Now, only four regional countries backing Taiwan, mostly belonging to the Micronesian group of islands which are under the control of the US.
- **Impact on India:** The China-Solomon Islands pact does not directly affect India.
- The islands are at significant distance from the mainland India and even the Andaman and Nicobar Islands.
- China's advances in the region, however, will be a cause for concern even in Delhi.

Topic 32. The National Pharmaceutical Pricing Authority

Importance for Prelims: Economy



Why in the news? The National Pharmaceutical Pricing Authority (NPPA), under the Ministry of Chemicals and Fertilizers, has fixed the price of 15 key drug formulations, used to treat diseases, including diabetes.

- NPPA was constituted by the govt of India in 1997 as an attached office of the Department of pharmaceuticals (DoP), Ministry of Chemicals & Fertilizers as an independent Regulator for pricing of drugs and to make sure availability and accessibility of medicines at affordable prices.
- It was made to fix/revise prices of controlled bulk drugs and formulations and to enforce price and availability of the medicines in the country, under the Drugs (Prices Control) Order, 1995-2013 (DPCO).

Function of National Pharmaceutical Pricing Authority

1. To implement and enforce the provisions of the Drugs (Prices Control) Order in according to the powers delegated to it.
2. To deal with the all legal matters arising out of the decisions of the Authority.
3. To monitor the availability of drugs, identify shortages, if any, and to take remedial steps.

4. To collect/ maintain data on production, exports and imports, market share of individual companies, profitability of companies etc., for bulk drugs and formulations.
5. To undertake and/ or the sponsor relevant studies in respect of the pricing of drugs/ pharmaceuticals.
6. To recruit/ appoint the officers and employees employees members of the Authority, as per rules and procedures laid down by the govt.
7. To render advice to the Central Government on the changes/ revisions in the drug policy.
8. To the render assistance to the Central Government in the parliamentary matters relating to the drug pricing.

Topic 33. INTEGRATED COMMAND AND CONTROL CENTERS
(ICCCS)

Importance for Prelims: Science & Tech



The Union Housing and urban Affairs Minister has announced that eighty Integrated Command and control Centres (ICCCs), an integral component of the smart Cities Mission, have already been set up.

What is the Smart Cities Mission?

- The smart Cities Mission aims at developing one hundred cities, which were shortlisted, into self-sustainable urban settlements.
- The mission was launched on the June 25, 2015 and was projected as the one aimed at transforming the process of urban development in the country.
- Among its strategic components is 'area-based development', which includes city improvement (retrofitting), city renewal (redevelopment) and city extension (greenfield development), plus a pan-city initiative during which 'smart solutions' are applied covering larger parts of the city.

- **Focus areas:** Key focus areas of the scheme include the construction of the walkways, pedestrian crossings, cycling tracks, efficient waste-management systems, integrated traffic management and the assessment.
- The scheme also assesses various indices to track urban development such as the Ease of Living Index, Municipal Performance Index, City GDP framework, Climate Smart Cities assessment framework, etc.

What is an Integrated Command and Control Centre?

- The smart Cities Mission includes setting up ICCCs for each such city as a vital step.
- These ICCCs are designed to enable authorities to monitor the status of various amenities in real time.
- Initially aimed at controlling and monitoring water and power supply, sanitation, traffic movement, integrated building management, city connectivity and internet infrastructure, these centres have since evolved to monitor various other parameters.
- The ICCCs are now also linked to the CCTNS (Crime and Criminal Tracking Networks and Systems) network under the Ministry of Home Affairs.
- The ICCC acts of a smart city acts as a “nerve centre” for operations management.
- It processes a complex and large pool of data sets at an aggregated level.
- It's the nodal point of availability of all online information and data relating to smart services included in a smart city, such as like led street lighting, CCTV surveillance cameras, air quality sensors, etc.

How did the ICCCs help in management of Covid-19?

- During the pandemic, they also served as war-rooms for Covid-19 management.

- Throughout the peak of the first wave, once countries were struggling to figure out ways that of combating the virus, the govt. used the ICCCs as a war-rooms for the managing ththe outbreak, with real-time surveillance and monitoring of districts across the country.
- Converted into war-rooms, the smart cities' ICCCs used the central information dashboard and provided info regarding the status of Covid-positive cases in various administrative zones of those cities, officials aware of the exercise said.
- The war-rooms were also used for tracking people under quarantine and suspected Covid-19 cases.

What is the current status of the Smarts Cities Mission?

- According to current Ministry data, the SCM has so far covered over 140 publicprivate partnerships), 340 'smart roads', 78 'vibrant public places', 118 'smart water' projects and over 63 solar projects.

Topic 34. INS VAGSHEER

Importance for Prelims: Science & Tech



The sixth and last of the French Scorpene-class submarines, INS Vagsheer, was launched into water at the Mazagon Docks in Mumbai.

- INS Vagsheer are going to be commissioned into the Indian Navy's Western Command after twelve to eighteen months when ocean trials end.
- It'll be based with Western naval Command, mostly in Mumbai.
- The six submarines were being built under Project-75 by the Mazagon Docks under technology transfer from the naval group as a part of a \$3.75-billion deal signed in October 2005:
- INS Kalvari was commissioned in December 2017; INS Khanderi in September 2019; INS Vagir in November 2020; INS Karanj in March 2021; and INS Vela in November 2021.
- P seventy five is one of 2 lines of submarines, the other being P75I, as a part of a plan approved in 1999 for indigenous submarine construction with technology taken from overseas firms.

- About 'Vagsheer' Vagsheer is named after the sand fish, a deep sea predator of the Indian Ocean.
- The first submarine Vagsheer, from Russia, was commissioned into the Indian Navy on December 26, 1974, and was decommissioned on April 30, 1997.
- **Specifications:** Vagsheer will take up to eight officers and thirty five men.
- It is 67.5 metres long and 12.3 metres high, with a beam measuring 6.2 metres Vagsheer can reach top speed of 20 knots when submerged and a top speed of 11 knots when it surfaces it's four MTU 12V 396 SE84 diesel engines, 360 battery cells for power, and a silent permanently magnetised Propulsion Motor.
- The hull, fin and hydroplanes are designed for minimum underwater resistance and all equipment inside the pressure hull is mounted on shock-absorbing cradles for enhanced stealth.
- **Features:** Vagsheer is a diesel attack submarine, designed to the perform sea denial as well as the access denial warfare against the adversary.
- It can do offensive operations across the spectrum of naval warfare including antisurface warfare, anti-submarine warfare, intelligence gathering, mine laying and area surveillance.
- It is enabled with a C303 anti-torpedo counter measure system.
- It can carry up to 18 torpedoes or Exocet anti-ship missiles, or 30 mines in place of torpedoes.
- Its superior stealth features include advanced acoustic absorption techniques, low radiated noise levels, hydro-dynamically optimised shape.
- It's the ability to launch a crippling attack using precision guided weapons, underwater or on surface.

Topic 35. ISRO DEVELOPS SPACE BRICKS FROM MARTIAN SOIL

Importance for Prelims: Science & Tech



The 'space bricks' developed by researchers from ISRO and IISc. special Arrangement

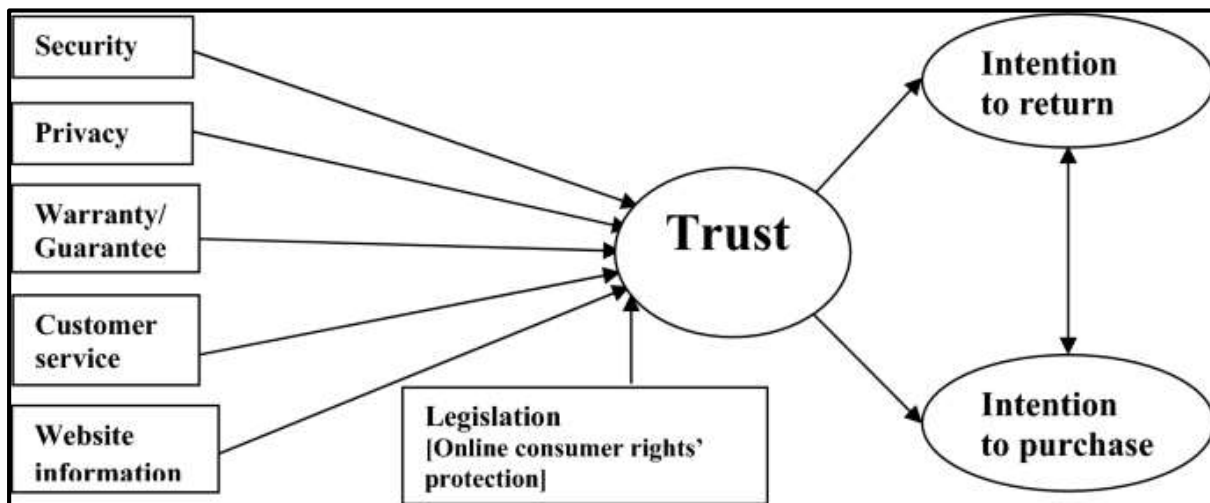
Researchers from the Indian space research Organisation (ISRO) and also the Indian Institute of Science (IISc) have developed a way to make bricks from Martian soil with the help of bacteria and urea.

- ISRO and the IISc have collaborated to develop a novel scalable technique of the manufacturing space bricks using Martian Simulant Soil (MSS).
- The team 1st made the slurry by mixing Martian soil with guar gum, a bacterium known as *Sporosarcinapasteurii*, urea and nickel chloride (NiCl_2).
- This slurry can be poured into moulds of any desired shape, and over a few days the bacteria convert the urea into crystals of calcium carbonate.
- These crystals, along with the biopolymers secreted by the microbes act as cement holding the soil particles together.
- This method ensures that the bricks are less porous, which was a problem with the other methods used to make the Martian bricks.
- The bacteria seep deep into the pore spaces, using their own proteins to bind the particles together, decreasing porosity and leading to stronger bricks.

- **Significance:** In the past, the team had made bricks out of lunar soil using a similar method.
- These ‘space bricks’ can be used to construct building-like structures on Mars that could facilitate human settlement on the red planet.

Topic 36. E-Commerce Portal Rules

Importance for Prelims: Economy



The Department of Consumer Affairs is in the process of bringing in revised ecommerce rules. The e-commerce rules were first notified in July, 2020 and later amended in May, 2021. A fresh revision is expected soon.

About Draft Consumer Protection (E-Commerce) Rules, 2021:

- **Key Features: Definition of E-Commerce Entities:** The Draft Rules expand the definition of an ecommerce entity to include two new categories— Entities engaged by an e-commerce entity for the fulfilment of orders, and Related parties (as defined under the Companies Act, 2013) of an ecommerce entity.
- • None of the e-commerce entity’s related parties can be a enlisted as a seller for sale to consumers directly.
- • This “broad definition” of ‘related party’ will potentially include all entities like those involved in logistics, any joint ventures, etc.
- **Clause of country of origin:** E-commerce entities offering imported goods/ services to ‘incorporate a filter mechanism at a pre-purchase stage to identify goods based on country of origin.
- Every time, they have to offer local alternatives to ensure a fair opportunity to domestic goods **Fallback Liability:** In case of non-delivery of goods or

services by a seller on a marketplace platform, which causes loss to the consumer, the marketplace will be subject to a fallback liability.

- Abuse of Dominant position in a market: An e-commerce entity is not allowed to abuse its dominant position in any market.
- **Requirement to appoint certain personnel:** All e-commerce entities are required to appoint: Grievance Officer to address consumer grievances, Nodal person for coordination with law enforcement agencies, Chief Compliance Officer for ensuring compliance with the Consumer Protection Act and Rules.
- **Flash Sale** The Draft Rules prohibit specific/ back to the back flash sales — defined as “sale organized by an e-commerce entity at the significantly reduced prices, high discounts or any other such promotions”.
Misleading Advertisements:
 - An e-commerce entity should not allow misleading advertisements on its platform.
 - Criticism of the Draft Rules: Infringing on other Ministries’ Mandate: The perception of “overreach” by the Consumer Affairs Department — venturing into areas of other departments such as the Department for Promotion of industry and Internal Trade (DPIIT) and therefore the Ministry of electronics & information Technology (MeitY) Contradictory to information Technology Act, 2000: It takes away the immunity granted specifically to marketplaces under the IT Act.
 - Equally, the Ministry of corporate Affairs feels that rules related to the abuse of competitive position are unnecessary since there's already a robust Competition Commission that oversees such issues.
- **Restrains Commercial Activities:** The proposal also refrains related parties from commercial activities on platforms.

- The definition of related party certainly needs some more clarity, otherwise it will be difficult not only for foreign players like Amazon and Flipkart, but even homegrown companies like Tata and Reliance to have their various brands sell on their super-apps For instance, Starbucks, an official partner of Tatas cannot sell coffee on Tata super- app.
- **Ban on Flash Sales:** Even offline retailers conduct flash sales throughout festivals or to clear out inventory.
- Also, consumers benefit immensely from these flash sales via reduced prices and greater choice.

Topic 37. PLI SCHEME FOR DRONES AND DRONE COMPONENTS

Importance for Prelims: Science & Tech

CABINET DECISIONS
15 SEPTEMBER 2021

Production Linked Incentive Scheme for Automobile Sector and Drone Industry

- Government has approved Production Linked Incentive (PLI) Scheme of **₹26,058 crore** for Auto Industry and Drone Industry
- Will incentivize emergence of **Advanced Automotive Technologies global supply chain** in India
- Will bring fresh investments of **over ₹42,500 crore** in five years
- Incremental production of **over ₹2.3 lakh crore**
- PLI Scheme for Drones** will bring fresh investments of **over ₹5,000 crore** in three years and incremental production of **over ₹1,500 crore**

Benefits:

- Will enhance **India's manufacturing capabilities**
- Will enable India to leapfrog to **environmentally cleaner, Electric Vehicles and Hydrogen Fuel Cell Vehicles**
- Will give a **big boost to manufacture of Electric Vehicles**
- Create additional **employment of over 7.6 lakh people**

The Ministry of the Civil Aviation (MoCA) has released the first provisional list of the fourteen beneficiaries under the Production-Linked Incentive (PLI) scheme for drone and the drone components. These include five drone manufacturers and the nine drone component manufacturers.

- The ministry invited applications from eligible manufacturers on 10th March 2022 and the last date for submission was 31st March 2022.
- The eligibility criteria for the PLI scheme for drones and drone components includes an annual sales turnover of INR 2 crore for drone companies and INR 50 lacs for drone components manufacturers; and value addition of over 40% of sales turnover.
- **PLI Scheme for Drones:** The PLI scheme for drones and drone components was notified on 30th September 2021.

- Under the scheme, a total incentive of INR 120 crore is spread over three financial year which is nearly double the combined turnover of all domestic drone manufacturers in FY 2020-21.
- The PLI rate is 20% of the value addition which is one of the highest among other PLI scheme.
- A unique feature of drone PLI scheme is that the manufacturers who fail to meet the value addition threshold in 2021-22 will be allowed to claim the lost incentive in the subsequent year if they make up the shortfall in 2022-23.
- **About Drones:** It is a layman terminology for Unmanned Aircraft (UA).
- Originally developed for the military and aerospace industries, drones have found their way into the mainstream because of the enhanced levels of safety and efficiency they bring.
- Remotely piloted aircraft have been divided into five categories based on their weight (existing rules)-
- **Nano:** Less than or equal to 250 grams. **Micro:** From 250 grams to 2kg. **Small:** From 2 kg to 25kg. **Medium:** From 25kg to 150kg. **Large:** Greater than 150kg.
- Draft Drone Rules, 2021 Abolish the need for various approvals, including certificate of conformance, certificate of maintenance, import clearance, acceptance of existing drones, operator permit, authorisation of R&D organisation and student remote pilot licence.
- **Digital Sky Platform:** The government will be developing a digital sky platform which will have an interactive airspace map dividing the country into green, yellow, and red zones.
- It will provide a secure and a scalable platform that supports drone technology frameworks, such as NPNT (no permission, no take-off),

designed to enable flight permission digitally and manage unmanned aircraft operations and traffic efficiently.

- **Reduced Airport Perimeter:** The draft rules reduced the airport perimeter from 45 km to 12 km.
- **Drone Corridor:** The Ministry also can facilitate development of drone corridors for cargo deliveries and a drone promotion council will be set up to facilitate a business-friendly regulatory regime.
- **Safety Features:** The draft rule also provides for safety features such as real-time tracking beacon, and geo-fencing, which are expected to be notified in future and a six-month lead time will be provided for compliance.
- **Increased Coverage of Drones:** The coverage has been increased from 300 kg to 500 kg and will cover drone taxis, while the Issuance of Certificate of Airworthiness has been delegated to Quality Council of India and certification entities authorized by it.

Topic 38. PURE GREEN HYDROGEN PLANT

Importance for Prelims: Environment



India's 1st pure green hydrogen plant commissioned in the Jorhat.

- Oil India Limited (OIL) has taken the first significant step towards Green Hydrogen Economy in India with the commissioning of India's First 99.999% pure Green Hydrogen pilot plant, with an installed capacity of 10 kg per day at its Jorhat Pump Station in Assam today.
- The plant produces green hydrogen from the electricity generated by the existing 500kW solar plant using a one hundred kw ion Exchange Membrane (AEM) Electrolyser array.
- The use of AEM technology is being used for the first time in India.
- This plant is expected to increase its production of green hydrogen from ten kg per day to thirty kg per day in future.

- The company has initiated a detailed study in collaboration with IIT Guwahati on blending of green hydrogen with natural gas and its effect on the existing infrastructure of OIL.
- **Hydrogen:** Hydrogen is one of the foremost abundant elements on earth for a cleaner alternative fuel option.

Type of hydrogen depend up on the process of its formation:

1. **Green Hydrogen:** Green hydrogen is produced by electrolysis of water using renewable energy (like Solar, Wind) and has a lower carbon footprint. Electricity splits water into hydrogen and oxygen.

By Products : Water, Water Vapor. Green hydrogen can drive India's transition to clean energy, combat climate change.

India has a favourable geographic location and the abundance of sunlight and the wind for the production of green hydrogen.

2. **Current Status Worldwide:** Less than 1% of hydrogen produced is green hydrogen. Manufacturing and deployment of electrolyzers will have to increase at an unprecedented rate by 2050 from the current capacity of 0.3 gigawatts to almost 5,000 gigawatts.
3. **Brown hydrogen:** Brown hydrogen is produced using coal where the emissions are released to the air.
4. **Grey Hydrogen:** Grey hydrogen is produced from natural gas where the associated emissions are released to the air.
5. **Blue Hydrogen:** Blue hydrogen is produced from natural gas, where the emissions are captured using carbon capture and storage.

Topic 39. WHEAT EXPORTING PROSPECTS OF INDIA

Importance for Prelims: Economy

Why in the news? India's prospects for sustained wheat exports are limited. The surplus stocks are a fraction of the quantity exported annually by the Russia and the Ukraine.

- Russia and Ukraine together accounted for nearly 30 percent of global wheat exports, nearly 60 million tons of wheat exported annually.
- India has a limited prospect of sustained wheat exports given the present one per cent share of global wheat exports despite being the second-largest producer in the world.

Reasons?

- Limited surplus– though India's wheat output has consistently exceeded its demand for the past five years, wheat inventory was just 23 million tons at the end of February.
- Rise of inflation-Exporting all the surplus stock would push up to the domestic wheat prices, potentially inviting restrictions on future exports, similar to the recent hikes in export tariffs palm oil in Indonesia.
- Uncompetitive global price-profitable only if global prices are higher than the MSP.
- Restriction under WTO –. Under World Trade Organization commitments, the govt. (read FCI) might not sell procured grain for commercial gains. Export parity price (EPP) amplifies the lack of the competitiveness.

- The price a producer can expect to receive is the FoBprice (the price when loaded onto the ship) minus the cost of getting the produce from the farm or factory to the border or the port.
- If the latter is high, because it is in India, the EPP falls for the producer, that further constrains exports.
- Role of non-price attributes like food safety, quality, and kind of wheat.
- A recent ICRIER study showed that Indian agricultural produce faces more rejections in key export markets compared to other developing countries.
- Trade strategy— export encouragement but restrictive on the import side

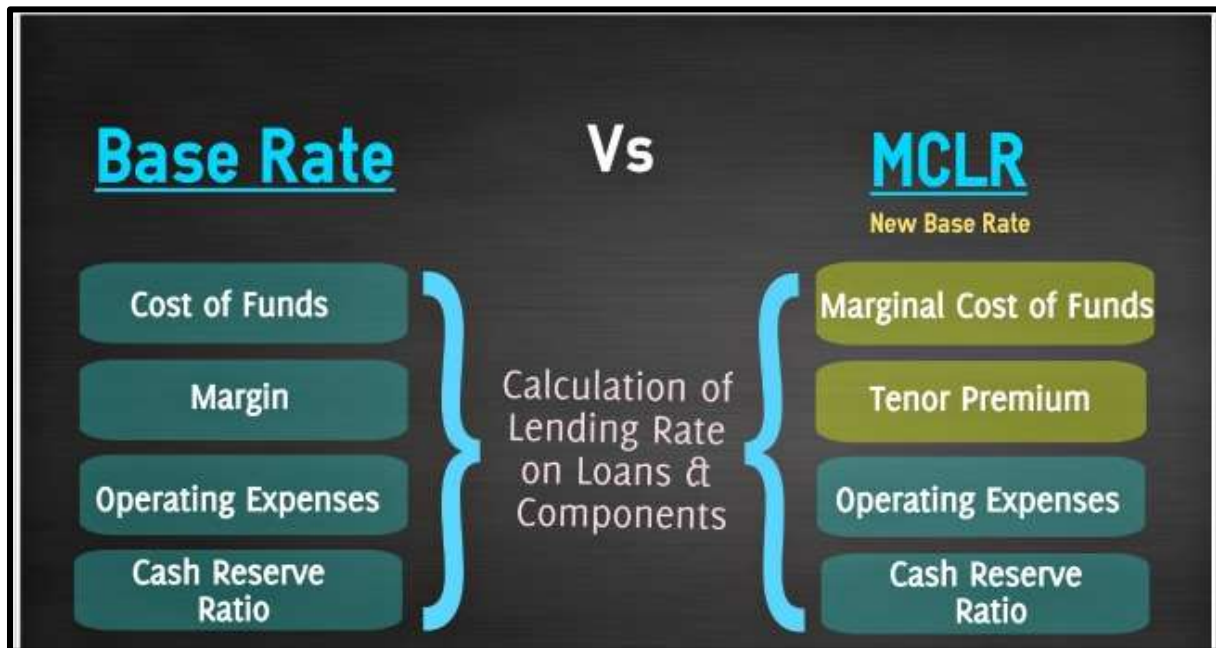
How does the government procure wheat?

- The Centre procures wheat by paying the minimum support price (MSP) announced for the crop. The Food Corporation of India (FCI) directly or through state government agencies procure wheat from the purchase centres established across the states. States do it under two systems— the centralised one, also called nondecentralised procurement system (non-DCP) and the decentralised one, also called DCP.
- Decentralised system— the state government or its agencies procure, store and distribute wheat against the Centre's allocation for targeted public distribution system and other weaker sections etc with the state, and that the excess stocks procured by the state and its agencies are handed over to the FCI for the central pool.
- The expenditure incurred by the state government on the procurement, storage and distribution of stocks under the decentralised system are reimbursed by the Centre.
- Centralized system—The wheat procured by the state agencies is handed over to the FCI for storage or for transportation to the consuming states.
- The FCI, which is that the central nodal agency for wheat procurement, pays the cost of procured wheat to the state agencies.

- Centre also reimburses the arthiyas' commission, administrative charges, mandi labour charges, transportation charges, custody and the maintenance charges, interest charges, the gunny bag cost and the statutory taxes.
- The cost of excess stocks handed over to the FCI is reimbursed to the state government or agencies as per the Centre's policies.

Topic 40. MARGINAL COST OF FUNDS-BASED LENDING RATES (MCLR)

Importance for Prelims: Economy



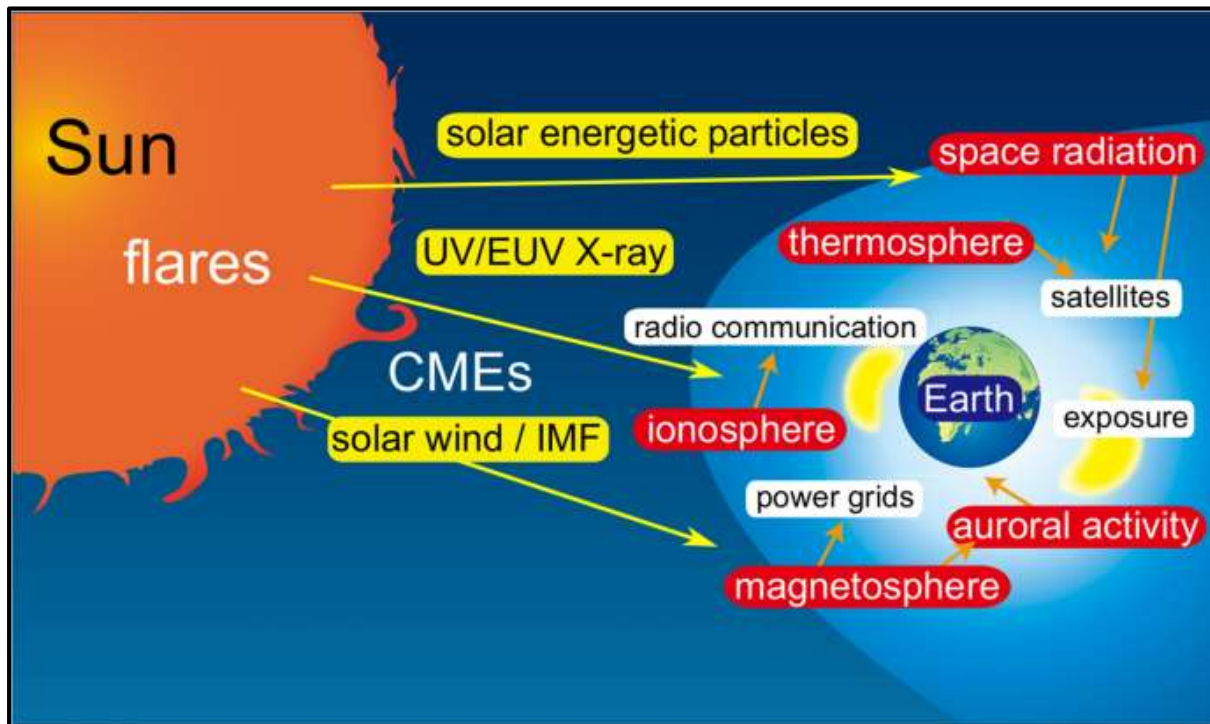
Why in the news? State Bank of India (SBI), India's largest commercial bank, raised the marginal cost of funds-based lending rates (MCLR) for the first time in three years, signaling that the soft rates regime that has prevailed since 2019 may be over.

- MCLR, was instituted by the RBI with effect from April 1, 2016 It is the lowest interest rate that a bank or lender can offer.
- It is applicable to fresh corporate loans and floating rate loans taken before October 2019 Impact: As a result of the increase in MCLR, borrowers who have taken home, vehicle, and personal loans can find their equated monthly instalments (EMIs) rising in the coming months.
- MCLR-linked loans had the largest share (53.1%) of the loan portfolio of banks as of December 2021.

- The increase in MCLR can cause resetting such loans at higher rates, because of the increase in WALR (weighted average lending rate) on outstanding rupee loans more than the policy repo rate cuts during the EBLR period.
- **Note:** MCLR is one of the internal benchmark lending rate External Benchmark Lending Rate To ensure complete transparency and standardization, RBI mandated the banks to adopt a uniform external benchmark within a loan category, effective in the 1st October, 2019.
- Unlike MCLR which was internal system for each bank, reserve bank of india has offered banks the options to choose from four external benchmarking mechanisms: The reserve bank of india repo rate
- The 91-day t-bill yield The 182-day t-bill yield Any different benchmark market rate of interest as developed by the financial Benchmarks India Pvt. Ltd.
- When the RBI hikes the repo rate, EBLR will go up and vice-versa.
- The share of EBLR loans in total advances was 39.2% in December 2021, according to RBI.

Topic 41. RECENT STRONG SOLAR FLARE CAN HAMPER SATELLITE COMMUNICATION

Importance for Prelims: Science & Tech



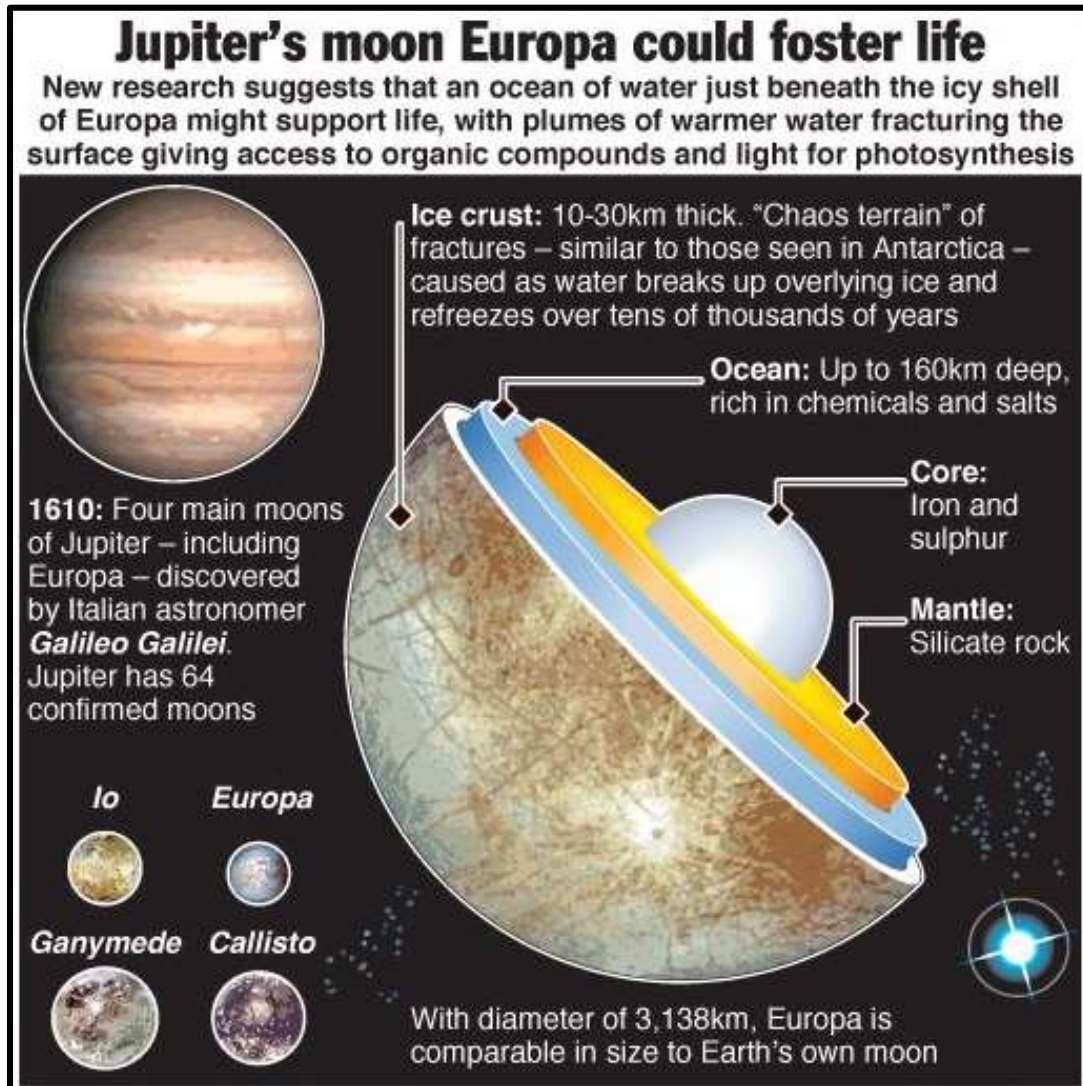
There is a strong ionospheric perturbation is ongoing over India, South East Asia and therefore the Asia-Pacific regions, according to scientists, which has caused the flare.

- Solar flares will disrupt telecommunication and satellite-based services in India and other parts of South East Asia in the coming days predicts solar physicists. With a large number of sunspots likely to face Earthwards soon, the Sun may continue to send electromagnetic radiations towards the earth.
- The earth has been facing solar flares frequently since April fifteen, said the information gathered by the Centre of Excellence in space Sciences India (CESSI), operating at the Indian Institute of Science Education and Research (IISER), Kolkata.

- **About Solar Flares:** A solar flare is a sudden flash of increased brightness on the Sun, usually observed near its surface and in proximity to a sunspot group.
- Powerful flares are often, but not always, accompanied by a coronal mass Solar flares originate from the Sun's active regions, like sunspots (the darker areas on the solar surface).
- These bursts of electromagnetic radiation that interfere with electromagnetic rays from satellites and telecommunication towers will last from a few minutes to some hours.
- They end up hitting GPS-based services, and the space station operations — especially the sunlight side.
- High-frequency radio signals can be completely lost or rendered of poor quality because of solar flares.
- Solar flares can lead to ionization in the lower ionospheric levels.
- Radio signals in the three to thirty MHz radio band are used for aviation and weather services, among others can get lost because of these flares.
- **About CESSI:** The Center of Excellence in Space Sciences India (CESSI) is a multiinstitutional Center of Excellence hosted by the Indian Institute of Science Education and Research (IISER) Kolkata and has been established through funding from the Ministry of Human Resource Development.
- CESSI aims to explore the Sun's activity, generate the understanding necessary for space weather forecasting, hunt for the gravitational waves, support national space science initiatives, participate in international capacity building activities and the pursue public-private partnerships in the space science research.
- The Center will take advantage of high-performance computing facilities, cloud computing and the high-speed National Knowledge Network grid to achieve its goals.

Topic 42. NEW RESEARCH ABOUT JUPITER'S MOON EUROPA

Importance for Prelims: Science & Tech



A team of researchers from Stanford University have said that on one of Jupiter's moons Europa, a prime candidate for life in the solar system might have abundance of water pockets beneath formations called double ridges.

What is the new finding?

- It is already known that Europa, whose surface is mostly solid water ice, contains water beneath it.
- The researchers are now saying that the double ridges – the formations which are most common on Europa's surface and are similar to those seen on Earth's greenland ice sheet.

- They are formed over shallow pockets of water.
- **About Europa:** Europa is slightly smaller than Earth's moon and its diameter is about one quarter that of the Earth.
- Even though Europa has a very thin oxygen atmosphere, it is considered one of the most promising places in the solar system to find present-day environments that are suitable for life beyond the Earth.
- It is also believed that underneath Europa's icy surface the amount of water is twice that on Earth.
- NASA notes that scientists believe Europa's ice shell is 15-25 km thick and is floating on an ocean, which is estimated to be 60-150 km deep.
- Interestingly, while its diameter is less than the Earth's, Europa probably contains twice the amount of the water in all of the Earth's oceans. National Aeronautics and Space Administration is expected to launch its Europa Clipper in 2024.
- The module will orbit Jupiter and conduct multiple close flybys to Europa to gather data on the moon's atmosphere, surface and its interior.
- Significance of the recent findings The central implication is that the shallow water pockets beneath the double ridge increase the potential habitability of the moon.
- The ice shell, which is the potentially miles thick, has been a difficult prospect for scientists to sample.
- However according to the new evidence, the ice shell is believed to be less of a barrier and more of a dynamic system.
- This means that the ice shell does not behave like an inert block of ice, but rather undergoes a variety of geological and hydrological processes.
- This suggests active volcanism and thus a possibility for life.

Topic 43. DRAFT BATTERY SWAPPING POLICY

Importance for Prelims: Science & Tech

KEY HIGHLIGHTS OF DRAFT POLICY ON **BATTERY SWAPPING**

- 
 - All metropolitan cities with a population of more than 4 million will be given priority for development of battery swapping networks
- 
 - The Central Nodal Agency responsible for rollout of EV public charging infrastructure shall be called Bureau of Energy Efficiency (BEE)
- 
 - Each battery comes with a Unique Identification Number (UIN) that will allow nodal authorities to trace the battery through its life cycle. Battery swapping operators must also store battery usage history
- 
 - Charging of swappable batteries at department stores, commercial or private properties using existing electricity connections will attract tariffs set by "appropriate commissions for those consumer types"
- 
 - The policy will allow for multiple interoperability solutions
- 
 - Energy operators to be "encouraged" to develop a 'power bank' for batteries at the end of their life cycle, to be used for storage of renewable energy for EV charging and other applications
- 
 - Transport departments and state transport authorities expected to ease registration processes for vehicles sold without batteries or vehicles with battery swapping functionality

The NITI Aayog has released a draft battery-swapping policy targeted at electrical two- and three-wheelers because the government think tank aims to expedite large-scale adoption of EVs.

- Under this, it has proposed offering incentives to electric vehicles (EVs) with swappable batteries, subsidies to companies manufacturing

swappable batteries, a new battery-as-a-service business model, and standards for interoperable batteries, among other measures.

What is Battery Swapping?

- Battery swapping is a mechanism that involves exchanging discharged batteries for charged ones.
- This provides the flexibility to charge these batteries separately by delinking charging and battery usage, and keeps the vehicle in operational mode with negligible downtime.
- Battery swapping is generally used for smaller vehicles such as two-wheelers and three-wheelers with smaller batteries that are easier to swap, compared to four-wheelers and e-buses, although solutions are emerging for these larger segments as well.

What is BaaS?

- Battery-as-a-service (BaaS) is seen as a viable charging alternative. Manufacturers can sell EVs in two forms: Vehicles with fixed or removable batteries and vehicles with batteries on lease.
- If you buy an electric scooter with battery leasing, you do not pay for the cost of the battery—that makes the initial acquisition almost 40% cheaper.
- Users can swap drained batteries for a fully charged one at a swap station.
- The depleted batteries are then charged on or off-site.
- The advantages of swapping include low downtimes for commercial fleets, reduced space requirements, and lower upfront costs.
- It is also a viable solution for those who don't have parking spots at home.
- Draft Battery Swapping Policy: Key Proposals Rationalizing taxes on battery: The draft policy has suggested that the GST Council consider reducing the differential across the tax rates on Lithium-ion batteries and electric vehicle supply equipment.

- Currently, the tax rate on the former is 18 per cent, and 5 per cent on the latter.
- **Incentivization for swapping enabled vehicles:** The policy also proposes to offer the same incentives available to electric vehicles that come pre-equipped with a fixed battery to electric vehicles with swappable batteries.
- The size of the incentive could be determined based on the kWh (kilowatt hour) rating of the battery and compatible EV.
- **Terms of contracts for battery providers :**The govt will specify a minimum contract duration for a contract to be signed between ev users and battery providers to ensure they continue to provide the battery swapping services after receiving the subsidy.
- **Public battery charging stations:** The policy also requires state governments to ensure public battery charging stations are eligible for ev power connections with concessional tariffs.
- It also proposes to install the battery swapping stations at the several locations like retail fuel outlets, public parking areas, malls, kirana shops and general stores etc.
- **Tariff rationalization:** It also proposes to bring such stations under existing or future time-of-day (ToD) tariff regimes, so that the swappable batteries can be charged during off-peak periods when electricity tariffs are low.
- **Registration ease:** Transport Departments and State Transport Authorities will be responsible for easing registration processes for vehicles sold without batteries or for vehicles with battery swapping functionality.
- **Unique identification number (UIN):** The policy also proposes to assign a UIN to swappable batteries at the manufacturing stage to help track and monitor them.

- Similarly, a UIN number will be assigned to each battery swapping station.
- **Locations:** The NITI Aayog has proposed that all metropolitan cities with a population of more than 40 lakh are going to be prioritized for the development of battery swapping networks under the first part, which is within 1-2 years of the draft policy getting finalized.
- **EV safety:** To ensure a high level of protection at the electrical interface, a rigorous testing protocol are going to be adopted, the draft said, to avoid any unwanted temperature rise at the electrical interface.

Why hasn't BaaS taken off yet?

- **High taxes:** There are economic and operational constraints. Energy service providers offering swapping solutions got to charge eighteen goods and services tax (GST) for swapping, compared to five GST on the purchase of an ev.
- **No incentives yet:** Additionally, the government's FAME-II incentives aren't offered to vehicles sold with BaaS or swap station operators.
- **Lack of interoperability infrastructure:** While these are economic disadvantages compared to direct charging solutions, the lack of a dense and interoperable battery swap infrastructure has also hindered the roll-out

Topic 44. SPRING MEETING OF IMF AND WB

Importance for Prelims: International Relations



MF Quota Each IMF member country is assigned a quota, or contribution, that reflects the country's relative size in the global economy.

- Each member's quota also determines its relative voting power as well as its borrowing capacity.
- Quotas are denominated in Special Drawing Rights (SDRs), Purpose: General Quota Review: A general review allows the IMF to assess the adequacy of quotas in relation to both the members' balance of payments financing needs and also the Fund's ability to help meet those needs.
- It also allows for the realignments in members' quota shares to reflect changes in their relative positions in the world economy.
- In addition, a member may request an ad hoc quota adjustment at any time outside of a general review.
- The IMF's Board of Governors conducts general reviews of quotas at regular intervals (no more than 5 years apart).
- Any changes in quotas must be approved by an eighty five percent majority of the total voting power, and a member's own quota can't be changed without its consent.
- The two main issues addressed in a general review of quotas are

- I. the size of an the overall quota increase and
- II. the distribution of the increase among the members. A quota formula is used to help assess members' relative position in the world economy and it will play a role in guiding the distribution of quota will increase.
 - The current formula was agreed in 2008.
 - Earlier Quota Review On February 7, 2020, the Board of Governors (BoG) adopted a Resolution concluding the 15th General Review of Quotas, with no increase in quotas and providing guidance for the 16th Review.
 - Under the Resolution, the 16th Review should be completed no later than December 15, 2023.
 - In 2010, the IMF's Quota and Governance Reforms were drafted; that finally became effective in 2016.
 - These reforms shifted more than 6% of the quota shares to emerging and developing countries from the US and European countries.
 - Presently, India holds 2.75% of SDR quota, and 2.63% of votes in the IMF.

**Topic 45. FM ENDORSE THE PARIS-BASED FINANCIAL ACTION
TASK FORCE'S STRATEGIC PRIORITIES FOR THE YEARS 2022-24**

Importance for Prelims: International Relations

The Strategic Priorities for the FATF for 2022-24 are: Strengthen the FATF global Network, FATF systems of Mutual Evaluations, Enhance International beneficial ownership Transparency, Increase Capabilities to more effectively recover Criminal assets, Leverage Digital Transformation, Ensure Sustainable Funding for FATF Strategic priorities FATF on Beneficial Ownership Transparency, the role of FATF global network in safeguarding global financial system.

- The Spring meetings of the International monetary fund (IMF) and therefore the Boards of Governors of the world Bank group (WBG) bring together central bankers, ministers of finance and development, private sector executives, representatives from civil society organizations and academics to discuss issues of global concern, as well as the world economic outlook, poverty eradication, economic development, and aid effectiveness
- Financial Action Task Force It is an inter-governmental body established in 1989 during the G7 Summit in Paris.
- The FATF assesses the strength of a country's anti-money laundering and antiterror financing frameworks, however it does not go by individual cases.
- The FATF plenary is that the decision making body of the FATF.
- It meets three times per year.
- Its Secretariat is located at the Organisation for Economic Cooperation and Development (OECD) headquarters in Paris.
- The FATF currently has thirty-nine members as well as 2 regional organisations — the European Commission and Gulf Cooperation Council.
- India is a member of the FATF.
- **Objectives:** To set standards and promote effective implementation of legal, regulatory and operational measures for combating money

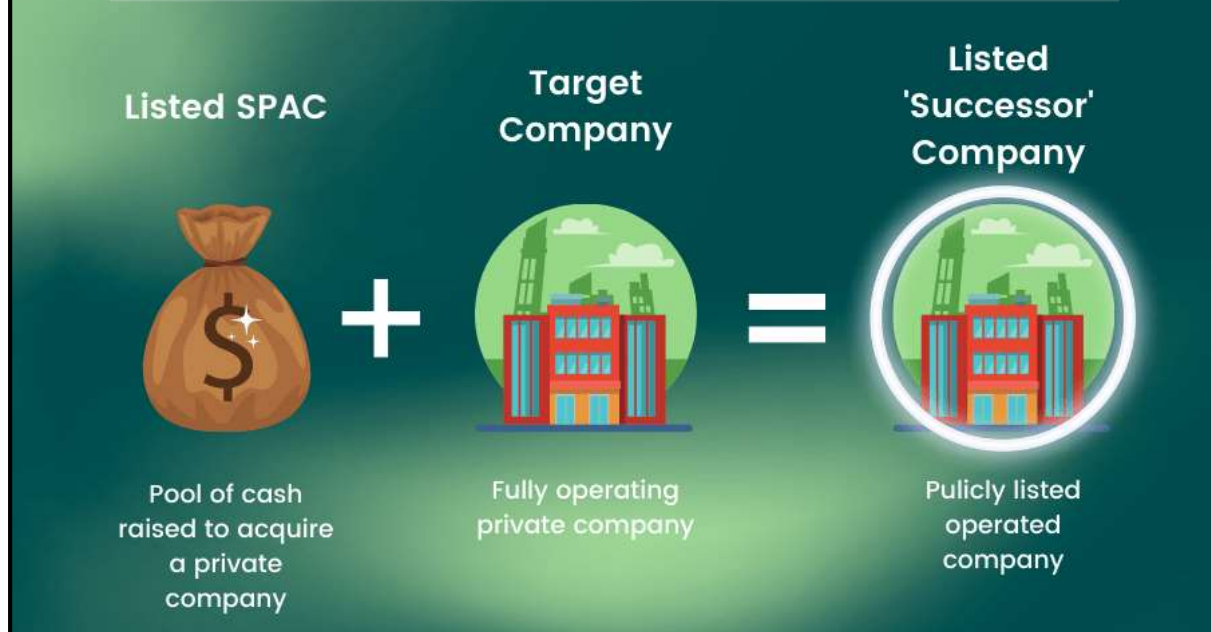
laundering, terrorist financing and other related threats to the integrity of the integrity of the international financial system.

- Lists under FATF: Grey List: Countries that are considered safe haven for supporting terror funding and money laundering are put in the FATF grey list.
- This inclusion serves as a warning to the country that it may enter the blacklist.
- **Black List:** Countries called Non-Cooperative Countries or Territories (NCCTs) are put in the blacklist.
- • These countries support terror funding and the money laundering activities. The FATF revises the blacklist regularly, adding or the deleting entries.
- The Paris-based FATF has placed pakistan on its grey list since June 2018 for failing to check money laundering, leading to terror financing, and was given a plan of action to complete it by October 2019.
- Since then, Pakistan continues to be on the FATF's list due to its failure to comply with the FATF mandates.

Topic 46. SPECIAL PURPOSE ACQUISITION COMPANIES (SPACS)

Importance for Prelims: Economy

How Does a SPAC Work?



The government is reportedly considering a regulatory framework for special purpose acquisition companies (SPACs) to lay the ground for the possible listing of Indian companies through this route in the future.

- An SPAC, or a blank-cheque company, is an entity specifically set up with the objective of acquiring a firm in a particular sector.
- An SPAC aims to raise money in an initial public offering (IPO) without any operations or revenues.
- the money that's raised from the public is kept in an escrow account, which might be accessed whereas making the acquisition.
- If the acquisition is not made within two years of the IPO, the SPAC is delisted and the money is returned to the investors.
- SPACs are mandated to return money to their investors in the event no merger is made within 2 years, the fineprint of many SPAC prospectuses shows that certain clauses could potentially prevent investors from getting their monies back.

- Historically, though, this has not happened yet.
- ASPACs are essentially shell companies, a key factor that makes them attractive to investors are the prominent people who sponsor them. Globally, prominent names like former NBA star Shaquille O’Neal, tennis star Serena Williams, former TikTok CEO Kevin Mayer, dell Technologies founder and CEO Michael dell, billionaire and venture capitalist Vinod Khosla etc.
- have participated in SPACs. However, celebrity involvement in a SPAC doesn't mean that the investment in a particular SPAC or SPACs usually is appropriate for all investors or a good investment.
- The Indian regulatory framework does not allow the creation of blank cheque companies.
- The companies Act, 2013 stipulates that the Registrar of companies will strike off a company if it doesn't commence operations within a year of incorporation.
- **Escrow accounts:** Escrow accounts are a financial instrument in which an asset or escrow money is held by a third party on behalf of 2 other parties that are in the process of completing a transaction.
- Escrow accounts can hold money, securities, funds, and other assets. In simpler terms, an escrow account is a third party account where funds are kept before they are transferred to the ultimate party.
- It provides security against scams and frauds especially with high asset value and dispute-prone sectors like Real Estate.
- Using escrow, a buyer will place their funds in a bank-based escrow account that is supervised by a 3rd party.
- The third-party disburses the funds from the escrow account to the seller only after all conditions in the financial agreement between the two parties have been met.

- Hence, this proves to be a powerful financial instrument that the removes trust-based issues in sectors like real estate.
- The escrow system follows a step-by-step timeline which makes transactions speculation-free.
- The transacting parties can track the movement of funds and progress of the contractual commitment.
- Since the transactions are the conducted under the due supervision of the diligent professionals, buyers' funds and sellers' offerings remain in secure hands. additionally, startups and the emerging businesses will leverage escrow payment methods to minimize risk for their specific-use transaction cases like procurement, supply chain, professional services, etc.

Topic 47. RISING INTEREST RATES & DEBT FUND INVESTMENTS

Importance for Prelims: Economy

Investors who put money in debt mutual funds and other securities are worried about their returns as the Reserve Bank of India prepares to raise interest rates in the coming months to tackle inflation.

Impact debt funds?

- A rise in rates of interest-the value of debt funds and other instruments falls as an investor feels he/she can get a new debt fund with a higher interest/coupon rate and thus, won't go for existing funds at lower interest rate or coupon rate.
- Technically, debt investors will lose out when interest rates go up, as the net asset value (NAV) of debt funds decline.
- NAV is the total value of the debt portfolio divided by the total number of units on a particular date.
- When Interest rates rise, the yield or coupon rises but the value declines, bringing down the NAV.
- A fall in interest rate interest rates -the value of the bond or debt mutual fund rises.
- The reason is that the interest rate on old bonds remains high when compared to the new bonds or funds that are floated.
- **Alternatives:** Diversified portfolio-a combination of liquid to money market funds and short-term debt funds, and/ or dynamic bond funds with low credit risks should remain the core fixed income allocation strategy.
- Investment in the long term debt mutual funds- longer holding period avoiding the current turbulence.

Topic 48. SHARE OF AGRICULTURE IN ECONOMY- TRENDS

Importance for Prelims: Economy

Over the last two years the share of agriculture has improved in overall GDP and the sector remained resilient despite the hit from COVID-19 pandemic. In FY 2021 the share of agriculture in overall GDP rose to 20 per cent, the levels that were last seen in FY 2004, according to the latest Economic Survey.

- Agriculture was the largest employer of workforce in India, the survey added.
- Trends: CMIE data from the consumer pyramid household survey shows:
- The share of agriculture in total employment has gone up from 35.3% in 2017- 18 to 36.1% in 2018-19 and then to 38% in 2019-20.
- The latest PLFS report shows a sharp increase in employment in agriculture from 42.5% of the total employment in 2018-19 to 45.6% in 2019-20.
- The share of manufacturing dropped sharply from 9.4% to 7.3%,
- The share of construction in total employment shot up to 15.9% in 2020-21 from 15.4% in 2018-19 and 13.5% in 2019-20.