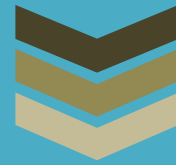


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Topic 1. GROSS STATE DOMESTIC PRODUCT

Important the subject: Economy

After the shock of the Covid-19 pandemic the economies that are part of 19 States and Union Territories exceeded their pre-Covid levels, according to the Ministry of Statistics and Programme Implementation.

- In 2021-22 the growth of India's GDP was 8.7 percent, against the 6.6 percent contraction in the period 2020-21.
- Its Gross State Domestic Product (GSDP) of the 19 states and UTs decreased or experienced a minimal increase in 2020-21, while their economies recovered and even exceeded the pre-Covid (2019-20) levels by 2021-22. Kerala along with Uttar Pradesh are the only two states with GSDPs that continue to be below pre-Covid levels.
- State growth rate for 2021-22. Highest Growth Andhra Pradesh - 11.43 per percent the lowest growth Puducherry 3.31 percent.
- It is the lowest growth of large state Uttar Pradesh- 4.24 per cent.
- Double-digit growth Rajasthan (11.04 percent), Bihar (10.98 per percent), Telangana (10.88), Delhi (10.23 per cent), Odisha (10.19 per percent) as well as Madhya Pradesh (10.12 per cent) including Andhra Pradesh.
- Growth causes The Base Effect is a reference to the effect on rates of growth (i.e. the growth rate of the previous year) over the rise in growth rate for the present year (i.e. the present growth).
- Recovery from pandemic
- The Ministry of Statistics and Programme Implementation is the one who compiles GSDP figures that are provided through the Directorate of Economics & Statistics of the government agencies of the state.
- The compilation of GSDP is comparable to the process of calculating GDP for the whole economy i.e. measuring in terms of money, or the value of all goods and services created within the geographic boundaries that is the boundaries of the State. GSDP is the sum of the value that is added by various economic sectors (Agriculture and Industry & Services) which are created within the boundaries of the state that is calculated with no duplication in a calendar year.
- In the Gross State Domestic Produ (GSDP) is consumption of fixed capitals (CFC) is subtracted to determine the Net State Domestic Product i.e. the NSDP is GSDP

divided by CFC Consumption Fixed Capital (CFC) is the amount of fixed capital that is used in the process of production.

- It is determined on the basis of time span that the asset is fixed. GSD at Constant Price and Current Price GSDP that is estimated for an accounting period is measured at the current price.
- This is referred to as GSDP at the current price.
- It is essential to get rid of the effects of inflation to evaluate the output over time.
- This is accomplished by calculating the GSDP for a certain price in the base year.
- The GSDP that is derived is known in the form of GSDP with constant price.
- This is a measure of the growth rate that is real for the economy.
- GSDP at Factor cost-sector wise GVA estimates is also known by the name of GSDP at Cost Factor.
- There are no taxes or subsidies considered when calculating an individual GVA.
- Basic Price GSDP - GSDP production tax + factor cost Production Subsidies = at the Basic Price Market Price GSDP at the Basic Price and Product Tax Product Subsidies = Market Price.
- To calculate the rate for Fiscal Deficit to Total GSDP, market Price will be the numerator.
- The importance of the State Domestic Product (SDP) The State Domestic Product (SDP) or State Income is the primary indicator of the economic development of a state.
- These estimations of the economy over a time, show the magnitude and direction of variations in the rates of economic growth.
- It is the State's Domestic Product that (SDP) is divided into three broad sectors including Primary sector Secondary sector, Tertiary sector and Primary sector.
- The data is collected economic according to the guidelines laid out by the Central Statistics Office (CSO) and then provided to MOSPI.
- Ministry of Statistics and Programme Implementation (MOSPI).
- It provides information on the total impact of the various programs for development implemented by the government and aids in cross-state comparison.
- It is the Finance Department prepares a macroeconomic framework statement and fiscal policy declaration every year, based on the SDP estimates to present to the

Legislature at Budget Sessions as part of Fiscal Responsibility and Budget Management (FRBM) Act of 2005.

- The states with the highest and lowest incomes in India in terms of GDP Maharashtra is the most GSDP-adequate state of the 33 Indian States and Union Territories.
 - In the fiscal year 2018, Maharashtra makes up 13.88 percent of the country's economy, at current prices.
 - Maharashtra is closely followed by Tamil Nadu (8.59%) and the state with the highest population Uttar Pradesh (8.35%).
 - The other states that rank in the top five include Gujarat (7.92 percent) along with Karnataka (7.87 percent).
 - India's biggest state Rajasthan is ranked 7th just after West Bengal, poorest state Bihar is at 14 and the capital Delhi is on the 12th spot.
 - The top five states contribute 46.6 percent of India's economy. Five states in South India together account for close to 30 percent.
 - Eight states in North-East India share 2.8%.
 - Andaman & Nicobar Islands has the lowest GSDP on the 33 states and UTs. Followed by Mizoram, Arunachal Pradesh, Nagaland, and Manipur.
 - Rang I State/Union Territories I Nominal GDP Rs. lakh crore = INR trillions
1. Maharashtra Rs28.18 lakh crore (US\$400 billion) 2019-20
 2. Tamil Nadu Rs19.43 lakh crore (US\$270 billion) 2020-21
 3. Uttar Pradesh Rs17.05 lakh crore (US\$240 billion) 2020-21
 4. Karnataka Rs16.65 lakh crore (US\$230 billion) 2020-21
 5. Gujarat Rs16.49 lakh crore (US\$230 billion) 2019-20
 6. West Bengal Rs12.54 lakh crore (US\$180 billion) 2019-20
 7. Telangana Rs9.78 lakh crore (US\$140 billion) 2020-21
 8. Andhra Pradesh Rs9.71 lakh crore (US\$140 billion) 2019-20
 9. Rajasthan Rs9.58 lakh crore (US\$130 billion) 2020-21
 10. Madhya Pradesh Rs9.17 lakh crore (US\$130 billion) 2020-21
 11. Kerala Rs8.54 lakh crore (US\$120 billion) 2019-20
 12. Delhi Rs7.98 lakh crore (US\$110 billion) 2020-21
 13. Haryana Rs7.65 lakh crore (US\$110 billion) 2020-21
 14. Bihar Rs6.12 lakh crore (US\$86 billion) 2019-20

15. Punjab Rs5.41 lakh crore (US\$76 billion) 2020-21
16. Odisha Rs5.09 lakh crore (US\$71 billion) 2020-21
17. Assam Rs3.51 lakh crore (US\$49 billion) 2019-20
18. Chhattisgarh Rs3.50 lakh crore (US\$49 billion) 2020-21
19. Jharkhand Rs3.29 lakh crore (US\$46 billion) 2019-20
20. Uttarakhand Rs2.53 lakh crore (US\$35 billion) 2019-20
21. Jammu and Kashmir Rs1.76 lakh crore (US\$25 billion) 2020-21
22. Himachal Pradesh Rs1.56 lakh crore (US\$22 billion) 2020-21
23. Goa Rs0.815 lakh crore (US\$11 billion) 2020-21
24. Tripura Rs0.597 lakh crore (US\$8.4 billion) 2020-21
25. Chandigarh Rs0.421 lakh crore (US\$5.9 billion) 2018-19
26. Puducherry Rs0.380 lakh crore (US\$5.3 billion) 2019-20
27. Meghalaya Rs0.348 lakh crore (US\$4.9 billion) 2020-21
28. Sikkim Rs0.325 lakh crore (US\$4.6 billion) 2019-20
29. Nagaland Rs0.319 lakh crore (US\$4.5 billion) 2019-20
30. Manipur Rs0.318 lakh crore (US\$4.5 billion) 2019-20
31. Arunachal Pradesh Rs0.273 lakh crore (US\$3.8 billion) 2019-20
32. Mizoram Rs0.265 lakh crore (US\$3.7 billion) 2019-20
33. Andaman and Nicobar Islands Rs0.088 lakh crore (US\$1.2 billion) 2018-19

Topic 2. US JOBS-RECESSION PARADOX

Important for subject: Economy

There is no precedent in history for a downturn in the economy to create 528,000 jobs within one month just like it was the case in July.

- US economic situation did during July
- A recession is usually is caused by an increase in rate of interest by the Reserve Bank of a country.
- The rising rates create risk to the financial system apart from a decline in demand and consumption due to the higher cost of borrowing, which results in a decline in the activity of the nation.
- Each US economic recession that has occurred that has occurred since World War II has been defined by the decline in the Gross Domestic Product (GDP) and an equal increase in unemployment.
- In general, unemployment and economic contraction are in sync since they feed one another: When the economy is in a slump firms lay off workers.

- In the end, consumers spend less money, which consequently, reduces demand and decreases business profits.
- Therefore, they cut back on employees, which further reduces demand.
- This can turn into a cyclical.
- However, presently the economic output in US is shrinking to match the Fed's rate of tightening.
- The unemployment rate is 3.5 percent this is the lowest level since 1970.
- The labour market is having record-high ratios of open jobs to prospective applicants, which indicates to an increase in employers continue to post open job advertisements.
- **Cause?**
- Massive inventory overflow due to the rush to stock up on commodities.
- A surge in the stocks due to rising corporate earnings and supply deficit due to demand-excess liquidity rather than debt is the most likely reason for a recession.
- The economy didn't have the capacity to handle the increased demand, however it stimulated the demand by transferring cash to individuals through an economic stimulus.
- The wage-price spiral is a common expectation that people expect the future price to be higher, and they will expect more wages.
- This, however creates its own inflationary spiral when companies attempt to sell their items and services at a higher price because of to an increase in the cost of production.
- Impact Less severe recession to the business sector.
- There is more room for tightening monetary policy until employment begins to fall in developing countries such as India If the Fed increases its policy rates and the gap between the interest rates of both countries shrinks, which makes countries like India less appealing, resulting in capital outflows.
- A higher rate signal from the Fed could also result in an ebb to expansion in the US as well, which is nevertheless a negative sign for global growth.
- Capital outflows are triggered by currency depreciation, and a growing current account deficit and the rise in import inflation.

Topic 3. GENERALIZED SYSTEM OF PREFERENCES (GSPS)

Important for subject: Economy

The Centre could engage with industry to examine the effect of the EU's decision to remove preferential tariff benefits for certain goods from India which includes electrical equipment, stone articles, plastics and leather articles beginning in January 2023.

- Specifics the scheme the EU provides preference access to specific products that originate from certain countries that are developing, and on its markets, in the in the form of reduced or even zero rates of customs duty.

- In accordance to EU regulations, GSP beneficiaries can lose preferences on certain product categories which are considered to be competitive enough.
- The EU adopted a brand new Generalized scheme of preferences in the year 2012. It has 3 distinct strands.
- GSP general arrangement which applies to all countries with beneficiaries.
- GSP+ is a specific scheme that removes all tariffs that apply to almost the same types of goods that are covered under GSP general arrangements.
- All But Arms: A special arrangement for countries that are least developed (as recognized as classified by the UN) providing them with access to duty-free and quota-free to all goods, excluding ammunition and weapons.
- Concerning the Generalized System of Preferences (GSPs) the system was first proposed through the UN to assist developing nations join the global economy.
- It was established around 1971 and was created under the auspices of the United Nations Conference on Trade and Development (UNCTAD)
- It is an umbrella that encapsulates the majority of preferential schemes offered by industrialized countries to developing nations.
- It is a reduction in Most Favoured Nations (MFN) tariffs or duty-free access of eligible exports from the beneficiary countries to countries that are the donor countries.
- The 13 countries that offer GSP preferential treatment to developing and emerging countries include: Australia Belarus Canada European Union Iceland Japan Kazakhstan New Zealand Norway Russia Switzerland Turkey USA
- The reason for granting GSPs is to assist developing countries, and in particular the less developed nations (LDCs) to promote productive capacity building and to increase investment and trade.

Topic 4. CHINESE COMPANIES AND ASSOCIATED RULES IN INDIA

Important for subject: Economy

A plethora of certified accountants and company secretaries, and cost accountants are under scrutiny by the regulators for possible violations of the law on companies in relation to the setting up of specific Chinese firms and their subsidiaries in India.

- Chinese companies in the sense that they are run by Chinese directors who are promoters.

- The process of incorporation involves a variety of processes like creating and certifying the documents, as well as submitting the documents to the Registrar of Companies for their approval.
- Procedures followed by the corporate affairs ministry established stricter guidelines for the selection of certain individuals from countries such as China as directors on boards of Indian companies, making the requirement for security clearances for these individuals.
- The citizens of border-sharing countries from the Land who are appointed directors on corporate boards must to be granted an authorization to secure the Ministry of Home Affairs along with a consent form.
- FEMA has been made compulsory for organizations from such countries who are involved in amalgamations with Indian businesses.
- In April, the guidelines demanded an approval from the government for foreign investment from countries that share border with India.
- In the past, only investments coming originated from Pakistan and Bangladesh were subject to such restrictions.
- The new rule is targeted primarily at China the new rules stipulated that investors from these countries will need to obtain regulatory approval prior to making investments in India or expanding the stake they hold within Indian companies.
- The Registrars of Companies (ROC) Registrars of Companies (ROC) appointed under Section 609 of the Companies Act that covers the different States as well as Union Territories are vested with the main responsibility of registering corporations and LLPs that are registered in their respective states and Union Territories and ensuring that these corporations as well as LLPs adhere to the legal requirements of the Act.
- These offices act as a register of records, which are related to the companies that are registered in them, and are accessible to people who are interested on the payment of the fee prescribed.
- It is the Central Government exercises administrative control over these offices via Regional Directors.

Topic 5. OVERSEAS BORROWING, A DOUBLE-EDGED SWORD?

Important for subject: Economy

The lure of lower rates could be deceiving since foreign currency loans could turn out to be costly.

- There are a variety of options to improve the capitalization of companies
- One approach is to inject excess earnings into the business through retained earnings.
- Another option is to reduce the stake of the existing shareholders in the business by launching rights issues to bring cash capital to the company.
- The third option, and possibly most efficient method is to take money via banks in

person, through NBFCs, or the public market by issuing bonds or debentures.

- Fourth, borrowings based on foreign currencies.
- Arguments for borrowing in foreign currencies if there's a gap in the interest rate between the international and domestic markets (favouring the one) it becomes more affordable to serve these loans.
- The risks it is important to keep in mind that the borrower remains willing to risks of currency exchange despite the different interest rate to due.
- If the currency of the country was to fall in value compared to its foreign counterpart, your business could be forced to pay more than they was expecting in terms of real.
- This means that the currency risk is offset by earnings in the foreign currency or some alternative measure.
- Example Vedanta is an Indian mining company that had an estimated market capitalization of Rs93,896 crore (at the date of writing this article)
- It had taken out \$1.2 billion as of February 20, 2021, when its U.S. dollar to rupee exchange rate was at around Rs72.6 but reached a maximum of Rs80.03 on July 18 , this year.
- The dollar, as nominal appreciated by 10.6 percent in just an entire year and a half.
- The increase of 10.6 percent in total interest payments amount to \$1.394 million.
- Problems with borrowing in this current economic climate is the imminent possibility of recession due to the increase in interest rates to limit inflation.
- Central banks around the world, particularly those of the Federal Reserve, have raised rates in unison.
- The impact of increasing rates is a combination of two aspects that are the first one being the possibility of lower profits due to a declining economy, and the second is the decrease in the value of the rupee when compared to foreign currencies.
- Even though the borrowing capacity of these firms is not changing but their earnings decrease due to an economic downturn, increasing the amount of debt they have to pay.
- The NCDs (non-convertible debt instruments) Debentures are long-term financial instruments issued by corporations to take out loans.
- Certain debentures come with the option of being able to be converted into shares after an arbitrary period of time, at the discretion of the holder of the debenture.

- Debentures that cannot be converted into shares are known as Nonconvertible Debentures (or NCDs).
- There are two kinds of NCDs - secured and unsecured. Secured NCD is secured by the funds of the business.
- If the company is unable to pay its obligation and the holder of the debenture may claim it through liquidation of the assets.
- Contrary to this it is not possible to secure backing in NCDs that are unsecured if the company is in default.

Topic 6. RS 6250-CR IPO WAS APPROVED: PHARMEASY'S PARENT COMPANY WITHDRAWS DRHP

Important for subject: Economy



Afraid of volatility in the markets, API Holdings, the parent company of the health tech unicorn PharmEasy has decided to withdraw its "red herring" prospectus (DRHP) that it submitted to the Securities and Exchange Board of India (Sebi) and the business informed its investors via a letter.

- **What is DRHP?**
- A Draft Red Herring Prospectus (DRHP) is a legal preliminary document.
- It is a crucial connection between the company preparing for an IPO as well as its investors and other stakeholders.
- A business that wants to get funds from the public markets through public offerings will need to submit a prospectus draft with SEBI (Securities and Exchange Board of India).

- The prospectus provides the bulk of the information relating to the business's operations and directors, as well as its previous record, and more.
- Except for some important information like the issue price.
- There is a clear declaration that says this information to be only preliminary and the possibility of to alteration.
- **What SEBI does with the DRHP?**
- SEBI checks and ensures that sufficient disclosures are provided to the issuer to allow the investors to take an educated decision on investing on the issue.
- It is essential to know that SEBI does not approve the offer. Likewise, SEBI does not recommend the shares or warrant the accuracy or sufficiency of DRHP.
- SEBI's comments on the draft offer documents are passed on to the banker who is merchant who then incorporates the changes needed and then files the final offer together with SEBI, Registrar of Companies (RoC) and stock exchanges.
- After scrutinizing the DRHP and the market regulator provides its suggestions that have to follow by the business.
- After the comments are implemented the document is given final approval and the document is then renamed RHP (Red Herring Prospectus).
- After RHP's registration in RoC is completed and a final prospectus that includes IPO size and price is published.

Topic 7. ELECTRICITY SECTOR

Important for subject: Economy

The National Load Dispatch Centre (NLDC) has prohibited discoms in Telangana from taking part in the day ahead market through an exchange called the Indian Energy Exchange (IEX) to purchase energy on the basis of not paying dues to Gencos even though they have made payments.

- National Load Dispatch Centre (NLDC) It was established according to Ministry of Power (MOP) announcements pursuant to Section 26 in the Electricity Act 2003 It is the apex authority to ensure the smooth operation of the power system of the nation.
- The principal tasks that are assigned to NLDC include: Supervision over all Regional Load Dispatch Centers.
- Scheduling and distribution of electricity across inter-regional lines in accordance

with grid standard set by the authority and grid codes defined by Central Commission in coordination with Regional Load Despatch Centers.

- Coordinating of Regional Load Despatch Centers for maximising efficiency and efficiency for the operation in the operation of National Grid.
- Monitoring of operation and grid security for National Grid. National Grid.
- Monitoring and control of inter-regional networks as necessary to ensure reliability of the system it is able to control.
- Coordinating in conjunction with Regional Power Committees for regional outage times in a national view to ensure the best utilization of power resources.
- Coordinating in conjunction with Regional Load Despatch Centers for the energy accounting for inter-regional power exchange.
- Coordination for the restoration of the grid's synchronization together with Regional Load Despatch Centers.
- Coordination for the trans-national exchange of power.
- Giving operational feedback on the national grid plan to the Authority and the Central Transmission Utility.
- Levy and the collection of this costs and fees from licensing companies or generating companies who are involved in the power system, in accordance with what can be regulated in Central Commission. Central Commission.
- Communication of information related to the operation of the transmission system, in line to the directions or regulations that are issued from the Central Government from time to time.
- The Indian Energy Exchange (IEX) Power Exchanges give market participants with multiple ways to purchase and sell of power, allowing them to control their power portfolios effectively.
- Indian Energy Exchange is the largest and most prominent Energy Exchange in India that provides a nationwide automated trading platform for the physical supply of renewable energy, electricity Certifications, and Certificates for Energy Saving.
- India Energy Exchange enables participants to buy electricity on the same day via intra-day contracts, to be used for the following day using day-ahead contingency on a daily basis for a rolling 7 days with daily contracts, and on a regular basis, through the weekly contract to control their electric portfolio for various time periods.

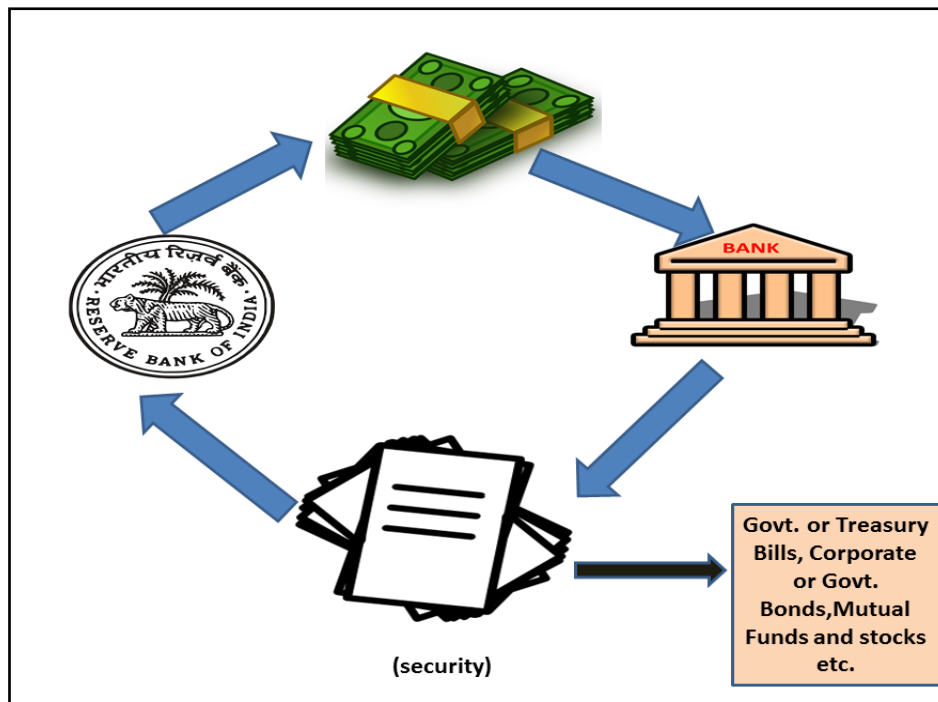
- This can be described as an Indian electronic system-based trader's exchange that is controlled through the Central Electricity Regulatory Commission (CERC).
- IEX began its operation on June 27, 2008.
- The exchange platform allows efficient price discovery and enhances the transparency and accessibility of the market for power in India and also improves the efficiency and speed of execution of trade.
- Exchange Exchange is a public company that has NSE as well as BSE.
- Indian Energy Exchange pioneered the development of power trading in India and offers an electronic platform to the many participants in the power sector, comprised of State Electricity Boards, Power producers, Power Traders and Open Access Consumers (both Industrial & Commercial).
- IEX is the one of two operating Power Exchanges in India.
- The Product Segments are: Day-Ahead Market (DAM) launched in June 2008, the DAM segment lets the participants make electricity transactions on a 15-minute block basis, one morning prior to the electricity being delivered.
- Sellers and buyers offer their bids in electronic form in the auction session . The matching bids are conducted through a bi-directional auction mechanism with a single auction price and market clearing.
- The Term-Ahead Market (TAM) Introduced in September 2009, contracts within TAM offer a wide range of selling or buying electricity with a duration of between to eleven days.
- It allows participants to purchase electricity on the same day using intra-day contracts, and for the next day with a day-ahead contingency, on daily basis for a rolling seven days with daily contracts as well as for a monthly basis with Weekly contracts to oversee their energy portfolios for various lengths.
- Renewable Energy Certificates (REC) Introduced in February 2011 The Renewable Energy Certificate marketplace allows transactions that deal with environmental aspects.
- It is possible that the Renewable Energy (RE) generator could choose to obtain RECs in order to support the environmental attributes of their production.
- Generators are able to sell RECs via the exchange.
- On the other hand, the obligated entities-distribution companies, captive plants and

open access consumers may opt to purchase RECs to fulfil their Renewable Purchase Obligation (RPO).

- Renewable energy generators have the ability to provide electricity to distribution companies at their typical price of purchase, and use the same method for consumption in captive mode, or sell the electricity to third parties and sell the environmental benefit of the renewable energy through RECs.
- The REC Market provides both the solar as well as non-solar RECs Energy Saving Certificates (ESCerts) They are traded certificates in the Perform, Achieve, Trade (PAT) Scheme of Bureau of Energy Efficiency (BEE) A market-based scheme to encourage energy efficiency within large, energy-intensive industries.
- IEX was the first and the only Power Exchange to commence trading in ESCerts on the 26th of September 2017.
- Power System Operation Corporation Power System Operation Corporation Limited (POSOCO) is an CPSE under the authority of the Ministry of Power, Government of India.
- It is the responsibility of the department to supervise and ensure that there is a continuous the operation of the Indian Power System in a safe, reliable and secure way, thus facilitating the mission of the organization.
- It is comprised of five Regional Load Dispatch Centres (RLDCs) as well as the National Load Despatch Centre (NLDC).
- Various apps like Vidyut Pravah, Merit, etc. created by POSOCO are used to distribute real-time information on Indian Power System in public domain in order to improve transparency in electricity market operations

Topic 8. LIQUIDITY ADJUSTMENT FACILITY

Important for Subject: Economy



What's going on in the news?

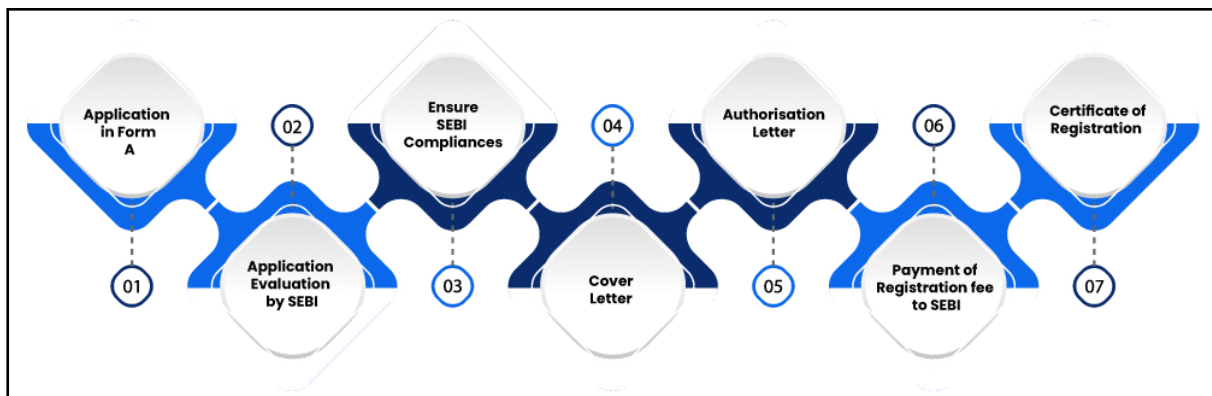
- It was announced that the Reserve Bank of India increased the repo rate to 5.40 percent under the Liquidity Adjustment Facility (LAF)
- Information: The repo rate which is the rate that RBI is able to lend cash to commercial banks has increased to 5.40 percent from its prior Covid rate of 5.15 percent.
- Effect: Increase in rate of interest and a decrease in the supply of money.
- It increases costs of borrowing for banks through the RBI which is transferred to lenders through a rise in the interest rate for loans.
- This results in higher EMIs on loans - auto and home, as well as consumer durables and can extend the duration of floating rate loans.
- Long run as interest rates on credit rise- companies, especially those in the manufacturing industry cut their business expansion and production, further raising the already high rate of unemployment.
- The delay in real estate and infrastructure products due to an increase in the costs of borrowing.

- This will result in a higher cost of borrowing and slow recuperation for MSMEs.
- Demand for fixed income securities is expected to rise.
- Fixed income securities are loans which pay a set amount of interest -- in terms of coupon payments to investors.
- The payments of interest are generally given semi annually, and the principal invested is returned to the investor upon maturity.
- They are by far the most popular kind of fixed-income securities.
- The asset quality of banks decreases because of the high cost of borrowing, they are more difficult to repay loans, which in turn increase the Gross Non-Performing Assets of Banks.
- GNPA as of March 20, 2022 was 5.9 and banks are aiming for to increase it to be at 5.3% by March 2023.
- Liquidity Adjustment Facility Liquidity Adjustment facility was suggested in the Narasimham Committee on Banking Reforms and was first introduced in 1998 by the RBI in 1998.
- The liquidity adjust facility (LAF) is an instrument for monetary policy that is utilized extensively in RBI.
- Reserve Bank of India (RBI) it permits banks to obtain money through the repurchase agreement (repos) or provide credit to the RBI through reverse repo agreements.
- There are two major elements of the Liquidity Adjustment Facility (LAF)
- Repo Rate: It's an amount at which Reserve Bank of India (RBI) lends to other banks.
- Reverse Repo Rate determines the amount at which the Reserve Bank of India (RBI) is able to borrow directly from commercial banks.
- This is a useful structure for cutting down on liquidity needs and is a way of maintaining the stability of the financial market.
- The Liquidity Adjustment Facility: Example that a bank has an immediate cash shortage due to the Indian economy's downturn.
- The bank can use RBI's liquidity adjustment facility signing a repo agreement in conjunction with RBI and then selling government securities for loans, and an agreement to purchase the securities.
- Let's say the bank needs an overnight loan of 50,000,000 and signs an agreement for repo that is 6.25 percent.

- The amount of interest due by the bank for the loan will be Rs8,561.64 (50,000,000 multiplied by 6.25 percent (365 days).
- Another example is that the economy is growing and a bank has additional cash in its account.
- In this scenario the bank could sign an agreement to reverse repo in conjunction with RBI by offering an offer of loan in exchange for securities issued by the government and accepting to purchase those securities.
- As an example, suppose that the bank has funds of Rs25,000,000 to give to the RBI and chooses to sign an agreement for one day of reverse repo with a rate of 6.6%.
- The RBI will then be able to pay an institution Rs4109.59 for interest (25,000,000 + 6 % x the 365 days of the year).

Topic 9. SEBI NEW RULES ON AIF AND VCF

Important for subject: Economy



What's the story?

- SEBI reduces rules on alternative investments funds (AIFs) or venture capital funds (VCFs) investment in foreign companies.
- Details: Previously the law stipulated that VCFs and AIFs that raise funds in India should only invest in the companies worldwide that have an affiliation to India and at the least an office in India.
- They can now invest in any business they choose around the globe.
- Invest in an overseas investment company that is registered in a country where the regulatory authority for securities markets is an official participant to the International Organization for Securities Commission's (IOSCO) Multilateral Memorandum of

Understanding or is a member to the bilateral agreement with SEBI.

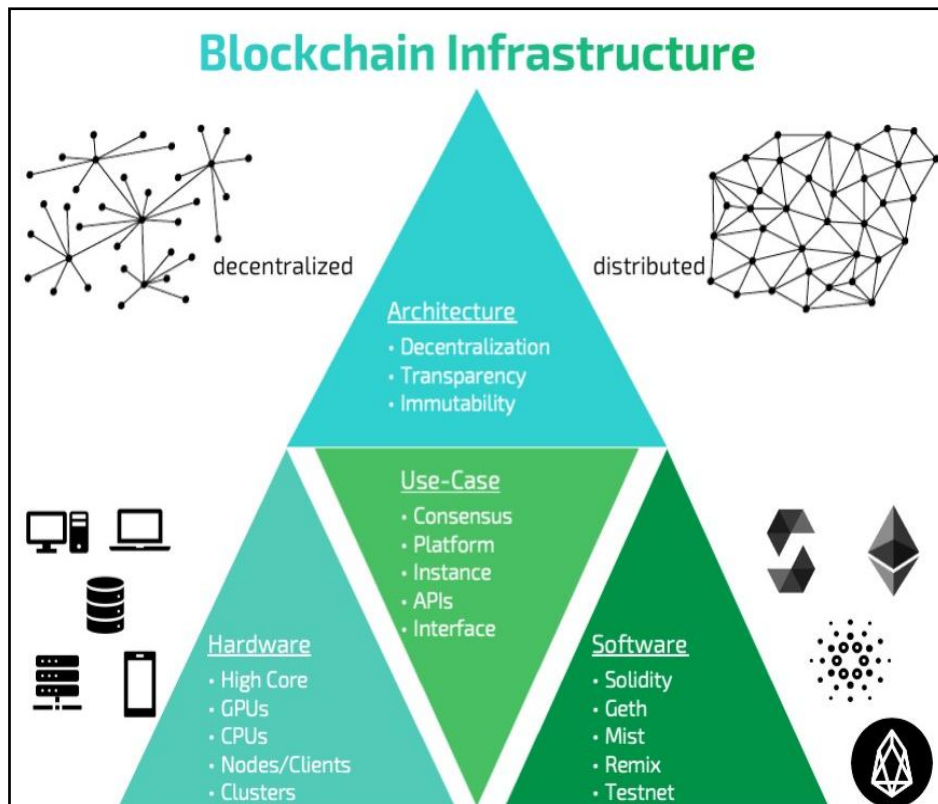
- In addition, AIFs or VCFs can sell their investment in overseas companies to those who are that are able to invest in overseas.
- AIFs and VCFs have to submit an application and provide the divestment information of the overseas investments prior to SEBI determines the allocation of limits for overseas investment in the form.
- The overseas investments that have been sold or divested by them to date are also disclosed to SEBI in the next 30 days.
- However, VCFs and AIFs can't invest in: companies that are which are incorporated in countries that don't adhere to international money laundering regulations Companies which are incorporated in other countries do not have agreements with SEBI or jurisdictions that are on the blacklist or have restrictions from FATF
- The concept: Alternate Investment Funds (AIFs) AIFs are investment funds with their purpose of pooling funds in the form of Indian or foreign investment to invest according to a set policy.
- They are an investment vehicle that invests in non-traditional assets such as real estate, infrastructure venture capital, etc.
- Venture capital or private equity hedge funds, property tangible assets, and commodities are the most common examples of alternative investments.
- It is a privately-owned investment vehicle that gathers funds from sophisticated investors, Indian as well as foreign with the intention of investing it according to an established investment policy to their benefit.
- Venture Capital Funds (VCFs) VCF is an AIF that invests mostly in securities that are not listed by companies that are start ups, or early-stage venture capital ventures that are primarily involved in the development of innovative products, technologies, services or intellectual property rights based actions or a brand new business model.
- It is the International Organization of Securities Commissions (IOSCO) founded in April 1983.
- Headquarters: Madrid, Spain IOSCO is a non-profit organization that develops, implements, and promotes the adherence to internationally accepted standards for the regulation of securities.
- It is the global organization that unites the world's securities regulators with over 95%

of markets for securities in the world, and is the standard setting body for the securities industry.

- It collaborates closely with G20 (Group of Twenty) and the Financial Stability Board (FSB) in establishing standards for strengthening markets for securities.
- Its IOSCO Objectives as well as the Principles of Securities Regulation have been approved by FSB as one of the primary standards for strong financial systems.
- The enforcement role of IOSCO extends to issues regarding the interpretation and application of International Financial Reporting Standards (IFRS) in which IOSCO keeps an (confidential) record of the enforcement actions of members of the agencies.
- IFRS is an accounting standards developed from the International Accounting Standards Board (IASB) with the aim of providing a standard accounting language to improve efficiency in the reporting of financial data.
- Objectives: To assist in the process of developing, implementing, and promoting the adherence to internationally accepted and uniform standards of oversight, regulation and enforcement to ensure the safety of investors, provide an efficient, fair and open markets, and attempt to tackle systemic risk; to enhance protection of investors and boost confidence of investors on the reliability of the securities markets through a strengthened exchange of information and cooperation in the enforcement of violations and oversight of market intermediaries and markets as well as to share information at the local and global levels about their own experiences to aid in the development of markets, improve markets and establish an appropriate regulatory framework.

Topic 10. BLOCKCHAIN INFRASTRUCTURE

Important for subject: Economy



We require resilient digital platforms, and they could be built in the Web 3.0 architecture.

- Web 3.0 the idea of Web3 often referred to as Web 3.0 is employed to refer to a possible next version of the internet.
- World Wide Web, which is often referred to as a Web is a collection of web sites or web pages which are stored on web servers and linked to local computers via the internet.
- These websites contain text pages, digital images, audios, videos, etc.
- The users are able to access the content on these websites from anywhere in the world of the world on the internet via their devices, such as laptops, computers, mobile phones and more.
- Web 3.0 is a decentralized web to run on blockchain technology.
- It will differ from the current versions used today, Web 1.0 and Web 2.0. Examples include blockchain such as NFT, DeFi, etc.
- In Web3 users will be able to take ownership stakes in applications and platforms unlike today, when tech giants control the platforms.

- The significance of Web 3.0-It is a brand different model of the Internet protocol that incorporates blockchain-based tokens, transparency, and decentralization.
- Web 3.0 is a fair and decentralized internet that will provide a decentralized and transparent internet that allows users to control their own personal data.
- Eliminates intermediaries: With the Block chain, both the date and location of transactions is recorded for the duration of time.
- This means that Web3 permits transactions that are peer to peer (seller to buyer) transactions without the need for intermediaries.
- The concept could be expanded to Decentralization as well as Transparency.
- The underlying principle of Web3 can be described as Decentralized autonomous organization (DAO).
- With DAO, there is no requirement for an authoritative central authority to authenticate or verify.
- Blockchain can be described as an ingenious distributed ledger technology which was first developed in the design and creation of crypto Bitcoin which was created in 2009 with the help of Satoshi Nakamoto.
- Blockchain utilizes a unique schema for data where verification information associated to the transactions is encrypted against tampering, and is stored in blocks.
- It is a unique mix of tamper-proof and permanent recording, real-time transactions transparency, and auditability.
- The exact replica that is the entire blockchain made available to every one of the computers or users connected to networks.
- Blockchain infrastructure is being adopted across the Globe Estonia, which is the world's biggest blockchain capital is using blockchain technology to confirm and process the e-governance offerings offered to the public at large.
- China BSN (Blockchain-based Service Network) to deploy blockchain applications using cloud computing in a more efficient manner.
- The Britain-National Digital Twin Program (NDTp) to foster collaboration between the developers and owners of digital twins within environments built.
- Brazilian Blockchain Network to bring participating institutions into governance as well as the technology system that supports the adoption of blockchain in solutions to improve the public good.

- Layer-1 and Layer-2.
- The term "layer 1" refers to the blockchain's fundamental architecture that is the core structure of a blockchain.
- Bitcoin, Ethereum, and BNB Chain are examples of Layer 1 blockchains.
- Layer 2 is a reference to networks that are built on the top that of the other Blockchains.
- In this case, for instance If Bitcoin can be described as Layer 1 then it is the Lightning Network that runs on the top of it can be an illustration of Layer 2.
- Therefore it is true that the Layer 1 solution can alter the rules and mechanism of the blockchain in direct ways while the Layer 2 solution uses an additional parallel network to facilitate transactions that are not on the mainchain.
- The need for layer 2 For instance, initially, Bitcoin was intended to be a decentralized system for payment which allowed users to remain anonymous and use it from any location.
- However, due to it's popularity, transactions became slow and expensive.
- Therefore, developers developed cryptocurrency layers.
- The initial layer was the main blockchain.
- Each layer below it is a complement to the one above and provides additional functions.
- Lightning Network is a second layer of Bitcoin that makes use of micropayment channels to increase the capacity of Bitcoin to make transactions more efficient.

Topic 11. A COUNTRY THAT IS DEVELOPED

Important for subject: Economy



The "developed country goal is the first of five vows Premier Narendra Modi exhorted Indians to make during his speech to Indians during Independence Day.

- "The "Panch Pran" - five vows? Each Indian should be focused on the development of the nation 100% freedom from slavery; taking pride in Indian tradition; Ensuring that priority is accorded to the unity and integrity of our nation.
- Every citizen must be accountable.
- What is a developed nation?
- Different institutions use different standards.
- The UN's World Economic Situation and Prospects divides the countries in three general categories: Developed economies - There are 31 countries that are developed in total according to the UN in all.
- Transition economies comprise 17 economies emerging economies, reviving countries

- The classifications are made to reflect basic economic conditions, and is not dependent on regional classifications.
- Therefore, there are many European nations can be classified "developed", and not all Asian ones are "developing".
- Criteria-United Nations employs its categorisation by the World Bank that is based upon Gross National Income (GNI) per person (in the current US dollars)
- What is the reason for which this United Nations classification contested?
- It's not accurate and lacks the analytical power: China's person income is more similar to the Norwegian equivalent than that of Somalia, and it is classified as a developing country, whereas Ukraine's per capita GNI stands at \$4,120 (a one-third of the china's) -- is classified in the category of "economies in transition".
- The position of India: India is currently in the middle of the so-called developed nations, and some of the developing nations despite the fact that India is among the largest economies in the world in terms gross domestic product (gross domestic product).
- India has seen a steady improvement in Human Development Index HDI metrics. For instance, the average life expectancy in the year of birth (one among the sub-metrics in HDI) for India has increased from forty years back in 1947 to about 70 years today.
- Human Development Index (HDI) is a composite indicator where the final score is reached through the analysis of three elements that affect longevity and health of people and the quality of the training they get, as well as their level of living.
- India is the third largest economy in terms of purchasing power parity (PPP) in terms of.
- But in terms of per-capita revenue, India is behind even Bangladesh.
- The per-capita income of China is 5.5 times higher than India while the UK's is close to 33 times.
- 10% of Indians have a minimum of are above that threshold, which is \$10 (PPP) each day for the world's middle class.
- The currently HDI scores (0.64) is lower than the scores of the developed nations did in the 1980s.
- How much will India reach in 2047?

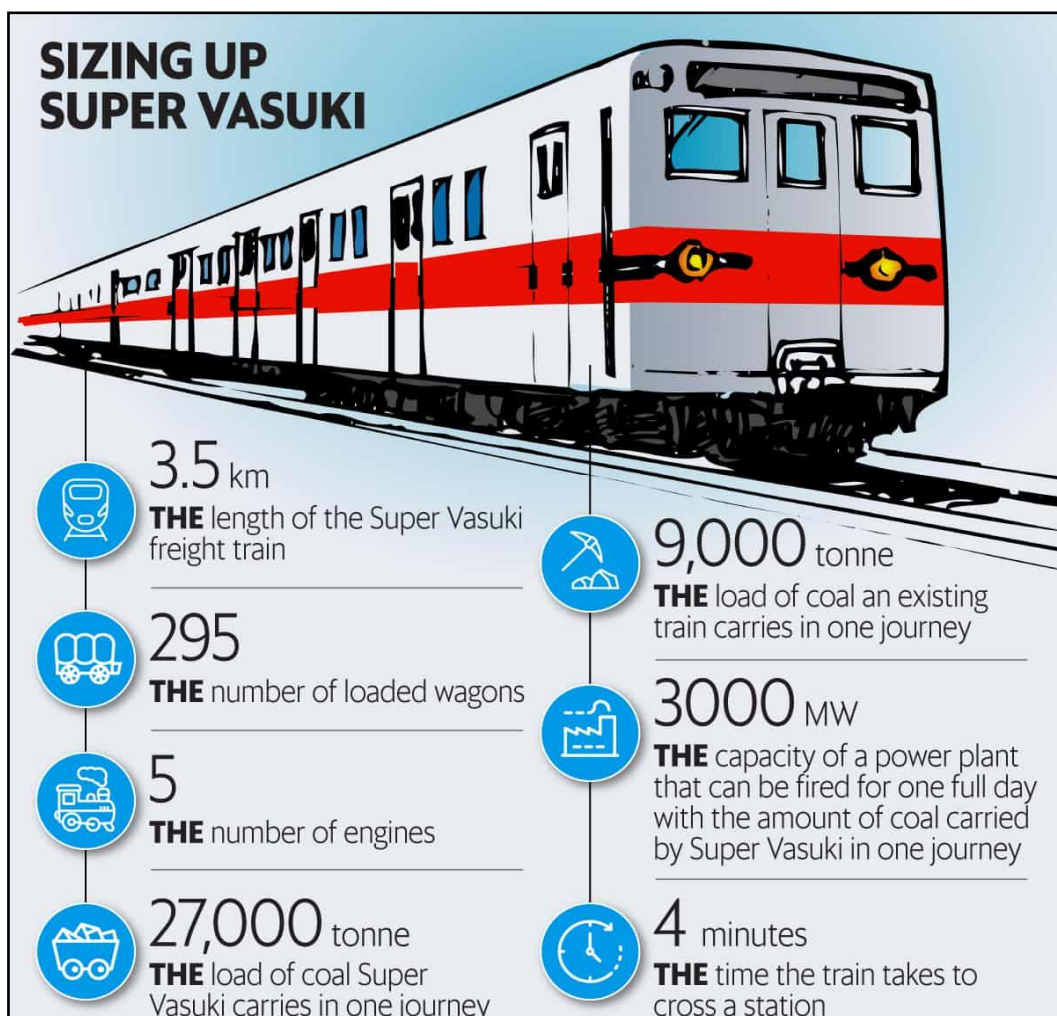
- In the event that India were to expand as fast that China was between 2007-2022 then it would take India an additional 15 years to reach the level that China is today.
- The report of the World Bank for 2018 describes what India can be able to achieve in 2047.
- The majority of its population will be part of the world's middle class i.e. households are entitled to higher healthcare and education as well as clean water, better sanitation as well as secure electricity, a safe living space, affordable housing and enough money to invest in leisure.
- It is necessary to meet the prerequisites- earning more than the poverty line, and improved delivery of public services.
- The classifications of other institutions include: World Bank: The World Bank assigns the world's economies to four income levels: low middle, upper middle, and high-income nations.
- The classifications are reviewed every year on the 1st of July.
- They are based upon the Gross National Income (GNI) per person in the current USD of the preceding year.
- In its most recent classification (2022-23) it is clear that the World Bank has classified India as a country with a lower middle-income.
- What defines a "developing" country classified under the WTO? The WTO does not define the terms 'developing' and 'developed' countries, so members have the freedom to declare whether they are developing.
- What are the advantages of the 'developing nation' tag?
- Certain WTO agreements provide developing countries with certain rights under special and different treatment' (S&DT) provisions, that can give developing countries longer periods of time to comply with the agreements as well as commitments to improve the trading opportunities available to those countries.
- WTO accords tend to aim at reducing government support to specific industries in the future. They also establish less lenient goals for countries in the developing world and give the countries more time to meet these goals when compared to advanced ones.
- This classification also permits different countries to give preference treatment.
- What are the advantages from LDC classification?
- The WTO recognizes LDCs using a classification made by the UN which is based on

criteria that are reviewed each three years.

- LDCs are typically exempted from specific provisions of WTO accords.
- Bangladesh is currently classed as an LDC which means it has no duty and has access to no quotas to almost every export to EU members.
- However, it is scheduled to be removed off being an LDC classification in the year 2026, as its GDP per capita is rising significantly, surpassing the GDP from India during FY21.

Topic 12. SUPER VASUKI

Important for subject: Economy



To celebrate the start of Amrit Kaal, Indian Railways ran Super Vasuki five-loaded train long haul, on 15th August 2022 in the context of the Azadi Ka Amrit Mahotsav Celebration.

- Super Vasuki is a 3.5-km-long freight train, with 295 wagons that carry 27,000

tonnes.

- The idea came from South East Central Railway Super Vasuki transported coal from Korba in Chhattisgarh to Rajnandgaon in Nagpur.
- It traveled for 267 kilometers.
- Five freight trains were merged to form one train to make the train.
- The transporter of the nation claimed that it is the longest and most heavy freight train is the Railways has ever run, and that it travels from station to station in just four minutes.
- Super Vasuki carries enough coal to run a 3000 MW power plant for the entire day.
- It is able to transport three times the amount of coal in one journey as the 90-car 100-ton rail rakes currently in operation.

Topic 13. DOT PREPARES AUCTION FOR SATELLITE SPECTRUM

Important for subject: Economy

It is believed that the Department of Telecommunications (DoT) is fighting hard in the direction of auctioning satellite spectrum.

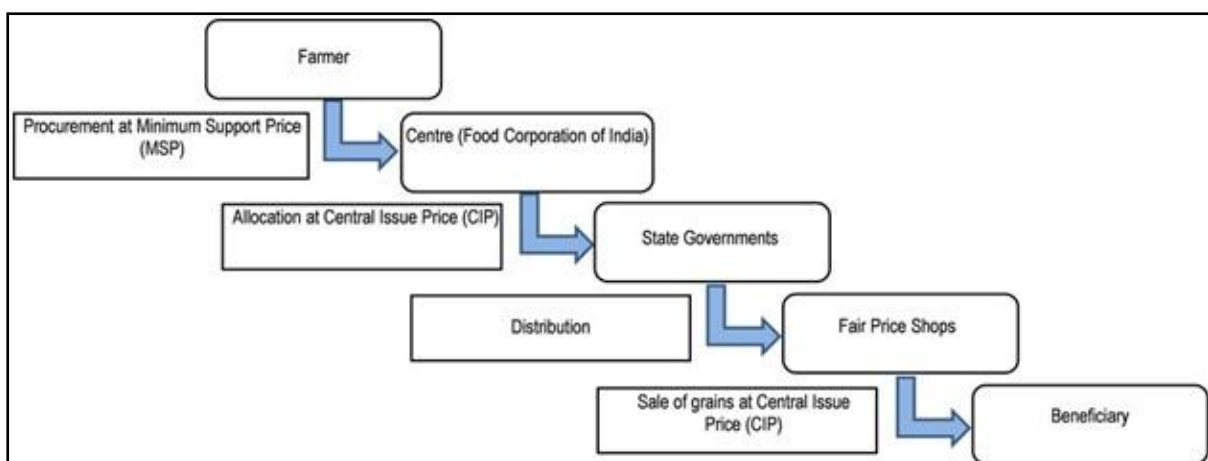
- After two years of arduous lobbying by satellite companies which include Low earth Orbit (LEO) companies like OneWeb, Telesat and Starlink which were seeking the administrative assignment of satellite spectrum.
- As the soon-to-be-announced space policy is expected to allow private players to enter space.
- Satcom market, satellite operators were looking at spectrum ranging from 27.5 to 31.5 GHz to offer new services, such as satellite broadband.
- Telecom operators also were eyeing the spectrum of 27.5GHz to 28.5 GHz for 5G. In addition, the government had decided in the course of negotiations for auctions for 5G that this band should be divided between satellite companies as well as telcos, and could be used for mixed-use.
- As India is preparing for an era of new phone calls with 5G, the latest technologies like low latency satellite broadband as well as satellite backhaul could also be introduced to this Indian market.
- Large tech companies like Amazon's Kuiper and Elon Musk's Starlink and Sunil Mittal's OneWeb are all eyeing the Indian market, while regulators consider the latest

set of rules for new technologies that are coming to market.

- Satellite Internet and LEO Technology The position of satellites LEO satellites are situated between 500km to 2000km from the earth, in contrast to the stationary satellites that are located around 36,000km.
- The term "latency" refers to the amount of time it takes to allow data to be transmitted and received dependent on the proximity.
- Because LEO satellites are closer to the Earth they are capable to deliver more powerful signals and higher speeds than fixed satellites.
- Furthermore, since signals travel further through space than fiber optical cables, LEO satellites are able to surpass, if not compete with the current ground-based networks.
- More investment: LEO satellites travel at the speed of 27,000 km/h and complete a full circle of the globe in between 90 and 120 minutes.
- In the end, satellites are able to only be in direct contact with an earth transmitter for a brief period of time.
- This means that they require massive LEO satellite fleets, and as a result an investment in capital.
- Because of to these expenses among the three types of Internet such as spectrum, fibre and satellite - satellite is the most costly.

Topic 14. CENTRAL POOL FOODGRAIN STOCKS AT THE LOWEST IN 5 YEARS

Important for subject: Economy



The rice and wheat stocks within the Central Pool, managed by the Food Corporation of India (FCI) is at its lowest for five years mostly due to less wheat being procured.

- Rice stocks, while above levels of 2020, could be depleted rapidly if there's an increase in production during the this kharif season, as paddy transplanting dropped by 12 percent since the last week.
- According to recent figures the total wheat and rice inventory as of August 1st stood at 545.97 lakh tonnes (lt) which is a significant increase from the previous lowest was 499.77 tonnes (lt) in 2017.
- Food Corporation of India The Food Corporation of India Food Corporation of India (FCI) is a public Sector Undertaking that is part of the Department of Food & Public Distribution, Ministry of Consumer Affairs, Food and Public Distribution.
- FCI is an statutory organization established in 1965 under the Food Corporations Act 1964.
- It was founded in the midst of a major shortages of cereals, specifically wheat.
- The Commission for Agricultural Costs and Prices (CACP) was formed in the year 1965 to suggest remunerative prices to farmers.
- Its primary function is to take on the purchase, storage transport, distribute, and market food grains as well as other food products.
- Buffer Stock: Buffer stock is a reference to the reserve of a particular commodity utilized to protect against the effects of price fluctuations as well as unforeseen emergency situations.
- It is usually used for important commodities and essential items like pulses, food grains, etc.
- This concept for buffer stocks was first introduced in the fourth Five Year Plan (1969-74) The Cabinet Committee on Economic Affairs establishes the minimum buffer norms on a an annual basis. i.e. beginning on the 1st April 1, 1st July, 1st October, and the 1st day of each financial year.
- Food Stock in the central government's pool is that which is of the States Government Agencies (SGAs) States participating of the Decentralised Procurement Scheme Food Corporation of India(FCI) The supply of food grains that are in the Central pool is distributed throughout the year based on of-take and the trends in procurement.
- Thus, the time of production and purchasing is a significant element to decide the required minimum grains stocks needed in each period of the year.
- In the present the standards for stocking buffer stocks set by the GoI comprise of

Operational Stocks: the stocks required to meet the monthly needs according to TDPS as well as OWS.

- Food Security Stocks the stocks to cover the shortfall in procurement.
- Food grains available as part of OWS or TDPS are considered to be operational stock.
- The surplus is classified as buffer stock as well as operational stock, both.
- The excess stock that is above the stockpiling minimum norms is regarded as surplus stocks and exported periodically to time, and additional allocations to certain states, or through the open market sale.
- Offshoring is the dreaded issue pollution occurs every July.
- Singapore is preparing to be able to see its greenery disappear in a puff of smoke.
- The smoke that comes from land-clearing fires erupts from Indonesia and Malaysia during the dry season.
- A recent study identified a different source of pollution to the air from Singapore's neighbours: heavy-metals like chromium in heavy industry.
- This pollution is present throughout the year, creating the risk of chronic exposure to health.
- It is a result of what experts have called "pollution havens": emerging Southeast Asian economies such as Indonesia, Malaysia and Thailand which are rapidly becoming industrialized.
- They are home to the industries Singapore as well as other countries that are able to outsource.
- What is a Pollution Haven? According to the Pollution Haven Hypothesis argues that firms seek to get around the expense of environmental regulations that are strict (and the high cost of energy) by setting up production in countries with environmental standards that are more relaxed.
- In this regard these studies provide convincing evidence of the impact of energy prices on companies who are able to outward Foreign Direct Investment (FDI).

Topic 15. INDIA IS AT 75 TOP POINTS IN SCIENCE AND TECHNOLOGY AND THE PACE OF INNOVATION

Important for subject: Economy

Council of Scientific and Industrial Research founded in 1942, established by the CSIR in 1942.

- It has been executing its duties successfully since independence.
- The CSIR has established 5 of their own research labs with the support of industry and the government, as well as procuring resources via crowdsourcing.
- With the help of The Sir Dorabji Tata Trust and the Government of Bombay, the Government of India (through the CSIR) created the Tata Institute for Fundamental Research with the CSIR contributing a substantial amount of financial aid in the beginning.
- One of the first instances of developing science and technology-based solutions was the harmonization of various calendar systems.
- A committee headed by the Chairman of MeghnadSaha was established to tackle this issue.
- The report of the committee was released through the CSIR in 1955.
- This was later the catalyst to it being accepted as the official national calendar which is which is now one of the nation's identity components.
- Another instance in the beginning of Independence was to tackle the issues of organizing democratic elections and to prevent fraud, such as duplicate voting for the same voter.
- In the National Physical Laboratory of the CSIR National Physical Laboratory developed the indelible ink composed of silver Nitrate to solve this issue.
- The CSIR's contribution to the leather has had a transformative effect.
- In the beginning, when the CSIR Central Laboratory for Leather (CLRI) was founded in 1948, the institute developed methods for making finished leather like the first indigenous production of leather chemicals.
- This made it possible to transition to semi-finished to finished leather feasible.
- During the Green Revolution, the CSIR's footprint was visible in the development of agrochemicals as well as the automation of farming.
- Chemicals industry required the needed momentum for growth, even though the

Bengal Chemicals and Pharmaceuticals Ltd. was established in 1948 by Acharya Prafulla Chandra Ray a long time prior to the declaration of independence.

- Two companies from the public sector were created post-independence built on the technology developed by the CSIR's labs which included The Hindustan Insecticides Ltd. and Hindustan Organic Chemicals Ltd.
- The former was founded to produce agrochemicals.
- In the same way, the production of anti-HIV medications through methods that were developed in CSIR labs provided the needed stimulation to the expansion in generic drug companies.
- Agri-business Samba Mahsuri rice Variety Bacterial Blight Resistant CSIR is working in conjunction in collaboration with DRR (ICAR) as well as DBT part-funded research and development of an improved bacterial blight-resistant Samba Mahsuri variation.
- It is being used in approximately 90,000 acres in areas like Andhra Pradesh, Telangana, Karnataka and Tamil Nadu.
- It is cultivated as a rice cultivar (Muktashree) for Arsenic-Contaminated Areas: A rice variety has been created that restricts absorption of arsenic to a permissible limits.
- The variety was released to farmers in West Bengal. White-fly resistant cotton variety The company has developed a transgenic cotton line that is invulnerable to whiteflies.
- It is anticipated to make it commercially viable in the next 10 years, once it has received proper regulatory approvals.
- The automation of farming was accomplished through the creation of an indigenous Swaraj tractor at the CSIR Central Mechanical Engineering Research Institute (CMERI) which led to the creation of Punjab Tractors Ltd. in 1970.
- In the 1950s, as solving the problem of feeding infants seemed impossible then the CSIR created a technology to transform the buffalo's milk into powder, and commercialised it with the assistance from Amul Industries.
- The Aroma mission is a part of CSIR in recent years has changed the lives of a lot of rural farmers throughout the nation.
- Lavender cultivation in Jammu and Kashmir in the Union Territory of Jammu and Kashmir has attracted attention around the world as India's 'Purple revolution'.
- Strategic Sector Drishti Systems located on the Main Runway 28, 10, at IGI Airport:

Drishti transmissometer, a system for measuring visibility offers details to pilots regarding visibility for safe landings and take-offs and is appropriate for all airport types.

- 27 systems have been installed throughout 10 important Indian airports throughout the nation, working with IMD.
- Tata Power SED has signed Memorandum of Agreement with Tata Power SED to delivery of the 54 Drishti Systems for installation at Indian Air Force Airfields; 22 units have been supplied and three units have been put in place.
- Head-Up-Display (HUD) in high-tech fields, CSIR-NAL made significant contribution in the development of an indigenous Head-Up display(HUD) specifically for Indian Light Combat Aircraft, Tejas.
- HUD assists the pilot when flying the aircraft and also in crucial flight maneuvers, including the aiming of weapons.
- Design and development of indigenous Gyrotron: addressing the issues of denial of technology: Design and development of indigenous gyrotrons for nuclear fusion reactors has been completed.
- Energy and Environmental: Solar Tree On the 22nd of July, a sun-powered tree developed by CSIR in the CMERI laboratory in Durgapur was inaugurated that occupies only a small amount of space to generate clean energy.
- Lithium Ion Battery: India's first lithium-ion battery manufacturing facility that is based on the indigenous and innovative materials for the production of 4.0 V/14 standard cells has been set up.
- The technology that has been developed on Li-ion batteries is expected to be available for sale within the next few months.
- Medical: JD Vaccine for Farm Animals: Vaccine developed and commercialized to combat Johne's Disease that affects Sheep, Goat, Cow and Buffalo to be able to protect them and boost production of meat and milk.
- The Plasma Gelsolin diagnostic kit for premature births and Sepsis-related Deaths a new diagnostic tool is being developed to identify premature birth and sepsis.
- Genomics as well as other technologies to facilitate Medical Decision - GOMED: Genetic diseases, although individual rare, collectively impact a significant number of people.

- A program known as the GOMED (Genomics and other technologies derived from omics to Enabling Medical Decision) has been created by the CSIR which offers a set of technologies of genomics for disease to help solve medical issues.
- The current portfolio comprises more than 80 genes as well as the analysis of mitochondrial genes for mitochondrial diseases.
- In just 9 months, which included the testing phase, GOMED has catered to more than 600 patients across the nation.
- Food and Nutrition: Ksheer-scanner The Ksheer scanner, an innovative technological innovation by CSIR-CEERI, detects the amount of adulterants and milk adulteration within 45 seconds for a cost of only 10p and puts adulterators who trade in milk on notice.
- Salt that is double-fortified: that has been fortified with iron and iodine, which has enhanced properties that have been developed and tested to combat anaemia among people.
- It will be available on the market shortly.
- The anti-obesity DAG Oil: A oil that is enriched using Diacylglycerol (DAG) in place of the conventional triacylglycerol (TAG) created.
- It is expected to be released in the market in the near future.
- Water Aquifer Mapping of water Scarce Areas: Heliborne transient electromagnetic and surface magnetic techniques used to map aquifers in six different geological areas within Rajasthan, Bihar, Karnataka, Maharashtra and Tamil Nadu.
- Understanding the unique properties that are present in Ganga Water: Ganga Water: Evaluation of the Water Quality & Sediment Analysis of Ganga in different parts is being conducted daily Mapping

Topic 16. THE BILL ON COMPETITION 2022

Important for subject: Economy

STRONGER COMPETITION LAW

Salient Features of Competition (Amendment) Bill, 2022

- Permit CCI to seize documents and records during probes
- CCI approval needed if value of the transaction over Rs 2,000 crore
- Assessment in 150 days
- Reduce litigations through penalty
- Incentivise parties during an investigation with lesser penalty

Last week the Indian government India presented the Competition (Amendment) Bill, 2022 within the Lok Sabha.

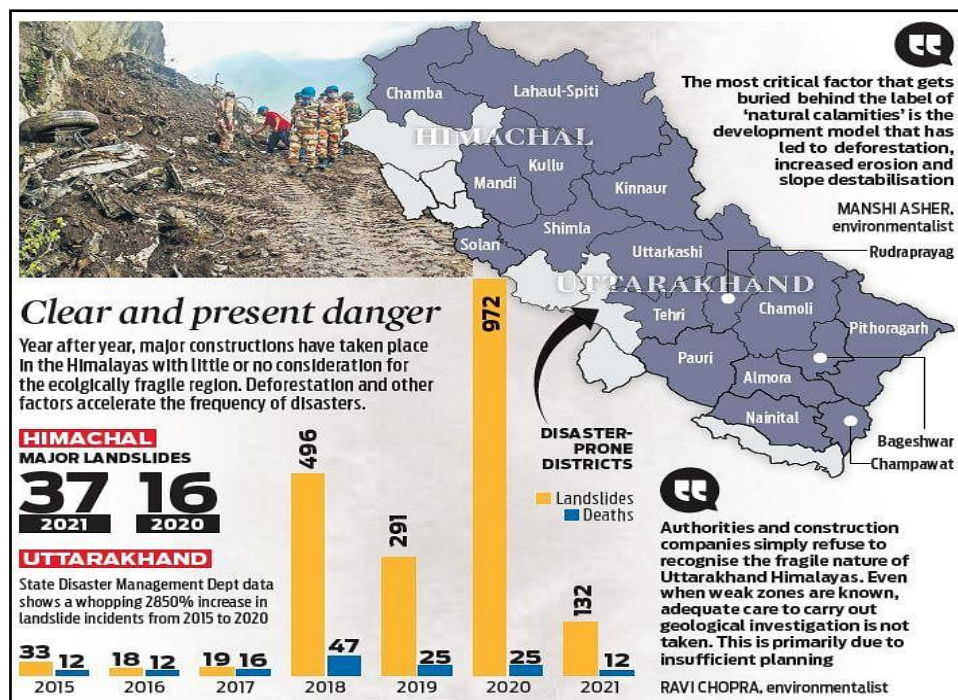
- The bill's main goal is to change the Competition Act, 2002.
- The bill expands the definition of "combined" to include transactions that have greater than Rs. 2 crore.
- The Act prevents any person or company to enter into any merger that could have a negative impact on competition.
- This prohibition applies to transactions in which the parties are involved with the sum of their assets is greater than \$1,000 or a cumulative turnover exceeding 3,300 crore.
- This is dependent to specific other conditions.
- The Bill changes what control means to mean the power to exert significant influence over the affairs of the business, management or commercial strategic decisions.
- It defines control as having a significant influence over the affairs, management or strategic commercial decisions.

- Act define control as having control over the administration or business affairs of one or more companies over a group of companies or organizations.
- It is a Bill reduces the time frame applicable to combination to 150 days.
- The Act stipulates that any combination will not be effective after the CCI has approved an order or more than 210 days have passed since the date that an application for approval was submitted or the earlier date.
- The Bill includes companies or individuals who are not involved in similar or identical businesses to agreement lists which have negative effects on competition as long as they actively contribute to the execution of these agreements.
- According to the Act any agreement between businesses or people who are involved in similar or identical businesses could have an negative effect on competition when it meets certain requirements.
- This includes:
 1. direct or indirect in determining the purchase or sale price,
 2. control of the supply and production of goods or the provision of services or
 3. either directly or in indirect ways resulting in collusive bidding.
- Bill proposes to increase the scope of cartels, by including hybrid anticompetitive agreements into their scope.
- The Bill introduces a leniency plus program to identify cartels which includes companies currently in the middle of a cartel investigation to disclose their involvement in a cartel to receive penalty protection.
- The Bill provides for CCI to shut down inquiry procedures when the company provides:
 1. The settlement
 2. commitments.
- The Bill allows the CCI to include additional types of transactions into the ambit that of the green channel.
- This Bill proposes to disqualify transactions involving open market purchases as well as other transactions conducted on a controlled market from standing still obligation under the merger control regime if the transaction was promptly reported to the CCI and that the purchaser is not able to possess any ownership/beneficial rights or interests in the securities or shares.

- The Bill expands the definition of a relevant product market to include the supply or production of services and products that are which are considered substituteable by suppliers.
- It defines relevant product market as Act defines relevant market as a set of products and services that are considered to be substitutes by consumers.
- The Bill extends the qualification requirements for the CCI members. CCI must have expertise in the field of technology.
- According to the Act the chairperson and members of CCI should have a professional background of minimum 15 years in areas like:
 1. economics
 2. the competition issue
 3. law
 4. management
 5. business.
- The Bill modifies the type of punishment for certain offenses instead of imposing fines to penalties.

Topic 17. HIMACHAL PRADESH PRONE TO NATURAL DISASTERS, SAYS STUDY

Important for subject: Geography



In the midst of Himachal Pradesh experiences the fury of nature's wrath in the form of floods, landslides and cloud bursts flash floods avalanches, and droughts year after year, natural disasters have become an issue of immediate concern, as the hills' most recent State of Environment report shows.

- The report was issued in the Department of Environment, Science and Technology.
- **What is Landslide?**
- A landslide can be defined as the motion of a large amount of rocks, debris or earth down an inclined slope due to the force of gravity.
- The areas with steep slopes, such as for instance, mountainous regions are more prone to the dangers of landslides.
- Mass motion, the mudflow, slips that rotate, and avalanches are just a few examples of land slides.
- Different types of Landslides Falls: It happens due to the sudden changes in the mass of geologic substances including boulders and rocks, which fall off the cliffs, steep slopes, or steep hills.
- Topples occur as a result of the forward movement of units or units about a pivotal location, due to the action of gravity and the forces exerted by the adjacent units or the fluids that are trapped in cracks.
- In this kind of it is common for rocks, debris or soil slide down slopes and form the material.
- Spread: It is usually found on extremely soft slopes or on flat terrain.
- NDMA Landslide Zonation Map of India National Landslide Risk Management Strategy National Landslide Risk Management Strategy was developed by NDMA.
- It clearly conveys the message of the necessity to enhance and strengthen mitigation of landslide-related disasters, landslide preparedness and relief mechanisms by mapping early warning systems (EWS) and awareness-raising and capacity building.
- It also provides for the formulating mountain zone regulations and policies and the mitigation of landslides that cause problems.
- National Institute of Disaster Management (NIDM) The National Institute of Disaster Management (NIDM) was established under the provisions of an Act of Parliament with a plan to serve as an exemplary institute for capacity building in India and throughout the region.

- The initiatives in this direction, which began with the establishment of the National Centre for Disaster Management (NCDM) in 1995 received momentum with the redesign of The National Institute of Disaster Management (NIDM) to provide training and capacity building.
- In the Disaster Management Act 2005, NIDM is given the responsibility of nodal authority for the development of human resources capacity building, capacity building, training as well as research, documentation, and advocacy on policy in the area in disaster-related management.
- Geological Survey of India (GSI), Ministry of Mines in conjunction along with British Geological Survey (BGS) under the National Environmental Research Council (NERC), UK funded, multi-consortium LANDSLIP project has created an initial prototype of a region-wide Landslide Early Warning System (LEWS) for India and it is being tested to be tested and evaluated through GSI within two test areas across India (Darjeeling district West Bengal, and the Nilgiris district in the Nilgiris district, Tamil Nadu).
- GSI has not yet developed an early warning system to avoid glacier-related disasters across the country.
- GSI has conducted research about the melting of glaciers through studying mass balance in addition to monitoring the receding or development of selected Himalayan glaciers.
- GSI via its LANDSLIP project is involved in creating an experiment in the region of Landslide Early Warning System (LEWS) built on thresholds for rainfall from 2017.
- The LANDSLIP research has produced an experimental model that will be available in 2020 that is based on the thresholds for rainfall in two areas in the test (Darjeeling district West Bengal, and the Nilgiris district in Tamil Nadu).
- LANDSLIP is funded by the UK Natural Environment Research Council (NERC)/Department for International Development (DFID) Science for Humanitarian Emergencies and Resilience (SHEAR) program.
- SHEAR's mission is to aid in improving humanitarian response to disasters by improving the monitoring, assessment, and prediction for natural hazards as well as threats across sub-Saharan Africa as well as South Asia, and, by working with users using this technology to minimize the effects of natural disasters.

Topic 18. WHAT'S THE CAUSE OF ARCTIC WARMING? SHOULD INDIA BE CONCERNED?

Important for subject: Geography



On August 11, Finnish Meteorological Institute researchers published their findings within the Communications Earth & Environment journal finding they found that the Arctic is warming more than four times quicker rest of the globe.

- **What exactly is Arctic amplifying? What is the cause?**
- Global warming is the ongoing warming of surface of the earth, has been accelerated because of to human or anthropogenic activities prior to industrial times, has increased the annual average temperature of 1.1 degree Celsius.
- Although changes are evident all over the globe and across the globe, any shift in temperature of the air and its net radiative balance are likely to result in more significant changes at the poles of the north and south.
- This phenomenon is called the polar amplification.
- These changes are most evident in the northern latitudes and are also known as Arctic amplifying.
- In the multitude of global warming-related reasons for this amplification the feedback

from ice albedo, lapse rate feedback water vapour feedback, and ocean heat transfer are the most important factors.

- Snow and sea ice possess an albedo that is high (measure of reflectivity on the surface) meaning that they reflect most of solar radiation, as opposed to the land and water.
- In the case of the Arctic global warming has resulted in the loss of sea ice.
- As sea ice melts it will mean that it is expected that the Arctic Ocean will be more adept at absorbing solar radiation and thereby accelerating the amplifying.
- The lapse rate, or the speed at which the temperature drops as elevation increases decreases with increasing temperature.
- Studies have shown that the ice albedo feedback and the feedback on lapse rate are the main cause of 40 percent as well as 15% the polar amplifying, respectively.
- **What do prior studies suggest?**
- Research has shown that research has shown that Arctic was warming twice as fast as the global average prior to the turn at the beginning of the 21st century.
- With updated data that the inter-governmental Panel on Climate Change released "Special Report" about the Ocean and Cryosphere in the midst of a changing Climate in 2019 in which it stated that the "Arctic surface air temperature has likely increased by more than double the global average over the last two decades."
- In May 2021 The Arctic Monitoring and Assessment Programme (AMAP) declared it was likely that the Arctic has warmed up three times faster than the rest of the world and the probability of sea ice totally disappearing during summer is 10 times more likely when the climate is warming by two degrees Celsius above preindustrial levels.
- **What are the implications from Arctic warming?**
- The reasons and effects of Arctic amplifying are cyclical the possible cause could also be a result of the Greenland Ice Sheet is melting at a alarming rate and the amount of sea ice is extremely reduced since 2000, as evidenced by the thin and younger ice sheets replacing the older and more thick ice sheets.
- Greenlandic Ice Sheet holds the second highest amount of ice, second only to Antarctica which is why it is vital to maintain an even sea.
- In the year 2019, this was the main reason of the rise in sea level by around 1.5 meters.

- If the sheet melts completely, sea level could increase by 7 metres, and be capable of subdividing island nations and coastal cities of major importance.
- Warming of the Arctic Ocean and the seas in the region, along with the acidification of the water, and changes in salinity levels are affecting the diversity of the ocean of marine species and dependent species.
- It is increasing also the frequency of rain, which affects accessibility and availability for the lichens to animals like the reindeer.
- The Arctic amplifying is leading to massive starvation and death in the Arctic wildlife.
- Permafrost in the Arctic is melting, it is releasing methane and carbon, both of which are the main greenhouse gases that contribute to global warming. Experts are concerned that the thaw as well as the melting will release long-dormant viruses and bacteria which were trapped in the permafrost, and could be the cause to illnesses.
- The most well-known instance of this is the permafrost melt that led to an outbreak of anthrax in Siberia in the year 2016, when around 250,000 reindeer perished.
- **What impact will this have on India?**
- A study entitled 'A possible connection with Arctic sea ice as well as the late season Indian Summer monsoon rainfall extremes In 2021, an ensemble consisting of Indian and Norwegian researchers found that decreased sea ice in the Barents-Kara region of the sea can result to intense rainfalls during the latter part of the monsoons between September and October.
- The changes in the atmosphere's circulation caused by to shrinking sea ice with the warm temperatures of the Arabian Sea contribute to enhanced precipitation and extreme moisture. in 2014.
- India installed IndARC, the first Indian moored-underwater observatory located within the Kongsfjorden fjord, Svalbard, to observe the effects of changes to the Arctic Ocean on the tropical events like monsoons.
- According to the report of the World Meteorological Organization "State of Global Climate in 2021' the sea levels across that Indian coastal areas is growing more than the average global rate.
- One of the main reasons for this increase is melting sea glaciers across the Arctic region, specifically the Arctic. Arctic Monitoring and Assessment Programme

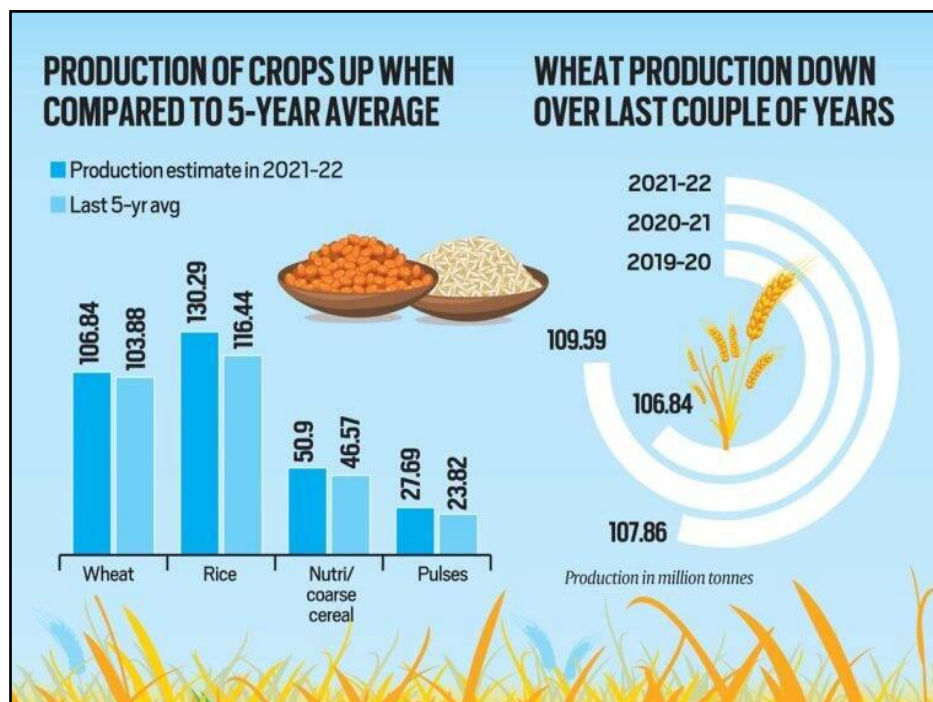
(AMAP) The Arctic Monitoring and Assessment Programme is one of six Working Groups of the Arctic Council.

- AMAP is mandated to examine and monitor the condition and condition of the Arctic region with regard to climate change and pollution issues.
- Document trends and levels of processes, pathways, and their impacts on ecosystems as well as humans, and suggest actions to decrease threats that are associated with them to be considered by government officials.
- To develop sound, scientifically-based assessments that are relevant to policy and public outreach materials to aid in the development of decisions and policies.
- AMAP's work is governed through the ministers from the Arctic Council and their senior Arctic Officials.
- They have asked AMAP to assist in international initiatives that aim to decrease the global threat from climate change and pollution.
- They include The UN Framework Convention on Climate Change and the and the UNEP's Stockholm Convention on Persistent Organic Pollutants and the Minamata Convention on mercury, as well as the United Nations' Economic Commission for Europe (UN ECE) Convention on Long-range Transboundary Air Pollution.
- Arctic Council It is Arctic Council is an intergovernmental body at the highest level that was set in 1996 through an Ottawa declaration to facilitate coordination, cooperation and interaction between the Arctic States in conjunction with indigenous communities as well as the other Arctic inhabitants.
- Arctic Council Secretariat: The permanent Arctic Council Secretariat formally became operational in 2013 in Tromso, Norway.
- The members of the Arctic Council: Ottawa Declaration proclaims Canada as well as Canada, the Kingdom of Denmark(Greenland and the Faroe Islands), Finland, Iceland, Norway, the Russian Federation, Sweden and the United States of America as members of the Arctic Council.
- The Arctic Council is not a ban on the commercial use of the resources found within the Arctic.
- It only aims to ensure that the exploitation is carried out in a sustainable way that does not harm the interests of the local population and in line with the local environmental conditions.

- India began its first scientific exploration to the Arctic Ocean in 2007 and established a research base dubbed "Himadri" at the International Arctic Research Base located in Ny-Alesund, Svalbard, Norway in July 2008 to carry research in fields like Glaciology and Atmospheric sciences as well as Biology sciences.
- In March 2022 India's Ministry of Earth Science has revealed India's Arctic Policy which is called "India and the Arctic creating an alliance to promote long-term sustainable growth'.
- India holds one of 13 positions of the Observer of the Arctic Council.

Topic 19. PRODUCTION OF WHEAT IS DOWN, BUT SEVERAL CROPS SET TO SET RECORDS

Important for subject: Geography



In the context of wheat production, it is expected to fall to 106.84 millions tonnes by 2021-22, down from 109.59 million tons in the 2020-21 time frame according to the fourth edition of the Advanced Estimates of Production of Food grains for 2021-22 released by the Ministry of Agriculture and Farmers Welfare on Wednesday.

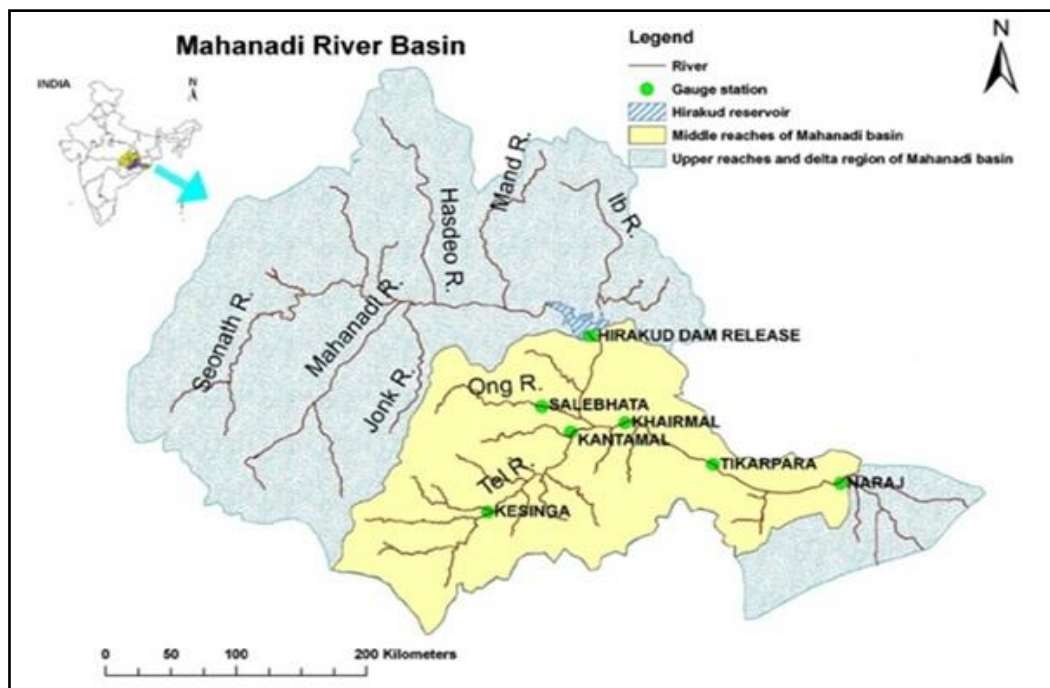
- The drop in stocks is due to the lower amount of consumption of 18.794 million tonnes in the current rabi market season -- and increased outflows due to the allocations of wheat under the PradhanMantri Garib Kalyana Yojana (PMGKAY) in

the past two years.

- Pradhan Mantri Garib Kalyan Anna Yojana PMGKAY is component of the Pradhan Mantri Garib Kalyan Package (PMGKP) to help the less fortunate fight Covid-19.
- The nodal ministry will be the Ministry of Finance.
- The initial announcement was for a three-month time period (April April, May and June of 2020) which covered 80 crore people who have ration cards.
- It was later extended until November 2020.
- The program aimed to provide all those who are protected under the NFSA (National Food Security Act of 2013) in addition to 5 kg grain (wheat or rice) at no cost to be added to five kilograms of food grains already distributed by the Public Distribution System (PDS).

Topic 20. MANY PEOPLE WERE STRANDED TO THE SIDE OF ODISHA FOR MAHANADI BASIN FLOODS WERE DUE TO HEAVY RAIN.

Important for subject: Geography



It's an innovative multi-purpose scheme that was developed by Er. M. Visveswaraya in 1937 following the recurrence of catastrophic floods in the Mahanadi river.

- Its first hydro power plant was installed in the year 1956.
- Hiraakud Dam is built across the Mahanadi River, close to Sambalpur city in Odisha in

India.

- Type: It's an interlocking structure made comprised of concrete, earth and bricks.
- It is the longest significant earthen dam that exists in India with an efficient irrigation system created from the dam Sambalpur has been dubbed the "rice bowl" in Odisha.
- The Mahanadi River system is the third-largest of peninsular India following Godavari and Krishna and is the biggest river in Odisha state.
- The basin of the river is extended to Chhattisgarh, Madhya Pradesh, Odisha, Jharkhand and Maharashtra.
- The basin is bounded by Central India hills on the north and by the Eastern Ghats on the south as well as east, and along the Maikala range to the west.
- The source of the river is an area near Sihawa in the Bastar hills of the State of Chhattisgarh to the south of Amarkantak. Principal Tributaries for the Mahanadi river, Seonath River, Hasdeo River, Mand River, Ib Jonking River, Tel River.

Topic 21. VIZHINJAM PORT

Important for subject: Geography

Adani Group has temporarily stopped construction of the Vizhinjam international seaport after protesters from the Latin Catholic Church backed by the church entered the building site.

- The Vizhinjam International Transshipment Deepwater Multipurpose Seaport is a colossal project that was commissioned by the Government of Kerala.
- It was designed to provide container transshipment services, in addition to multi-purpose bulk cargo and break.
- The port is currently built in the landlord model, with the Public Private Partnership component on the design build finance, operate as well as transfer ("DBFOT") basis.
- The private partner the concessionaire M/s Adani Vizhinjam Port Private limited began construction process on December 5, 2015.

Topic 22. HOW CAN LOW LEVELS OF WATER AT THE RHINE RIVER HAVE A NEGATIVE IMPACT ON GERMANY'S ECONOMY?

Important for subject: Geography



Running through to the Swiss Alps to the North Sea via German industrial corelands the Rhine is an important route for a variety of products, from grains to coal and chemicals.

- It's an important connection between industrial producers as well as international export terminals located in North Sea ports such as Rotterdam and Amsterdam canals, and other rivers connect with the Rhine to the Danube which makes it possible to transport goods to and from the Black Sea as well.
- Rhine River Rhine River is the second-longest river in Central and Western Europe after the Danube and is located in the Swiss Alps (in Switzerland).
- The Rhine river is known by various names based on the country in which it flows.
- It is known as Rhein in Germany; Rhine in France and Rijn in the Netherlands.
- The Rhine runs through six countries: Switzerland, Principality of Liechtenstein, Austria, Germany, France and the Netherlands before it joins the North Sea at Rotterdam.
- Danube River Danube is the second-longest in Europe following the Volga.
- It is located within the Black Forest mountains of western Germany and flows for

2,850 kilometers to its mouth at the Black Sea.

- Its course passes across 10 nations: Germany, Austria, Slovakia, Hungary, Croatia, Serbia, Bulgaria, Romania, Moldova, and Ukraine.
- Black Sea Black Sea is an inland ocean that lies between the far-southeastern region of Europe and the western edge from the continent in Asia along with the state of Turkey.
- It is connected to the Mediterranean Sea first through the Bosphorus Strait, then through the Sea of Marmara and the Dardanelles Strait, before heading south via it to the Aegean Sea, and finally it joins the Sea of Crete.
- Additionally, the Black Sea is also connected to the Sea of Azov by the Strait of Kerch.
- Bordering Countries: Romania, Bulgaria, Ukraine, Russia, Georgia, and Turkey.

Topic 23. HOW PHASE-CHANGING MATERIALS CAN BUILD GREEN STRUCTURES

Important for subject: Science and Technology

The phrase "70 percent of all the structures India will be able to build in 2030 are still to be constructed is repeated so many times that it's become a cliché.

- It is believed that the International Energy Agency has determined that carbon dioxide emissions from old as well as new constructions could rise to 194 million tons in the year 2020 to two million tonnes in 2040.
- "Phase-Changing Materials" or PCMs materials that alter their phases in the process of absorbing energy or releasing it.
- Vapour ice forming from water is a great example of these 'phase-changing materials PCMs, also known as phase-changing materials.
- PCMs can be integrated into building materials through macro the encapsulation process (hollows in walls, slabs or bricks that contain PCMs) or micro Encapsulation (PCMs are powdered and mixed into building materials).
- Benefits A new study by AAridi from the University of Angers, France, and A Yehya of Harvard University says that PCMs could reduce energy consumption by five to fourteen times the energy in a unit than conventional storage materials (water or masonry rock).

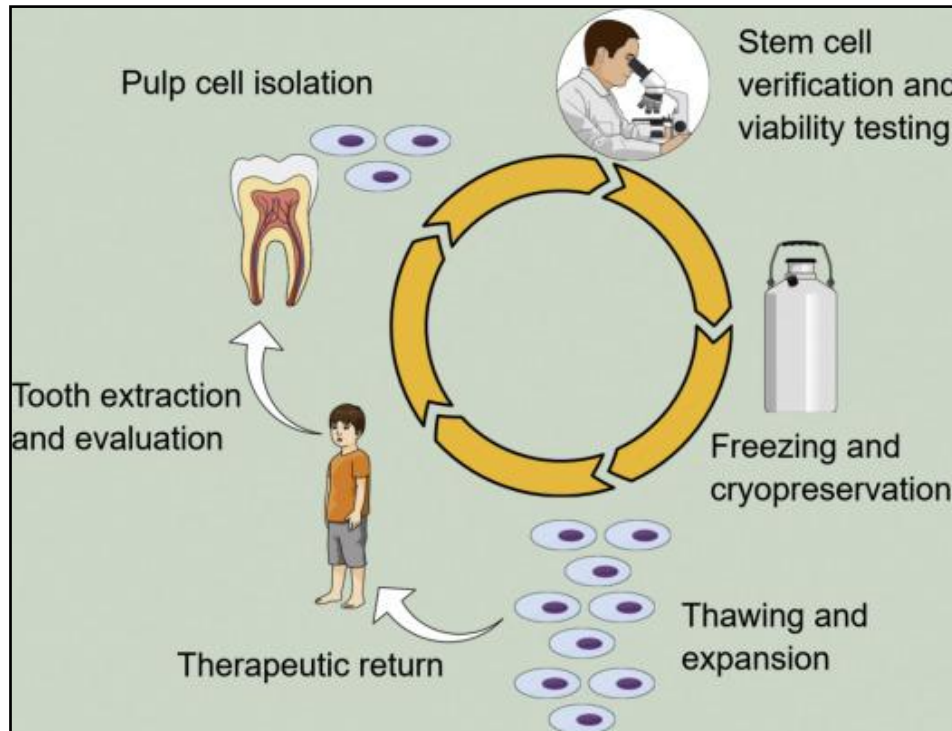
- PCMs can be used to store a substantial amount of energy from thermal sources in the building when it is not in peak load to ensure that the building is in balance with the peak demand environment, according to.
- In addition Latent heat devices are superior to sensible ones because they are able to store a huge amount of heat, with minor to zero temperature difference.
- The term "latent heat" refers to that is required to make the phase change, without altering the temperature.
- The study has looked into the different benefits of various kinds of PCMs used in building sand concluded that coconut oil will be the most effective.
- Different types of PCMs PCMs are derived from a variety of sources: raw oil (paraffin wax) and compounds (salt and hydrates) or even plants (palm soya, coconut or oil).
- Four kinds of PCMs were examined including magnesium nitrate Hexahydrate salt hydrates, and octadecane for Paraffins and coconut oils and coconut oil that is produced using biofertilisers.
- Octadecane is the most expensive at about \$8 per kg which was then coconut oil (\$2 per kg) magnesium nitrate, Hexahydrate (\$0.3 per kilogram).
- Octadecane, which is derived from crude oil has the most environmental impact of the four PCMs.
- However, it is the most efficient in storing and releasing the greatest amount of energy due to its large latent heat.
- This makes it ideal for spaces with limited space.
- The coconut oil PCM that uses bio fertilisers is green transparent, non-toxic, and non-toxic and has outstanding thermo-physical and chemical properties to be used for TES (thermal energy storage).
- In addition coconut oil, it is inexpensive and easily accessible as renewable and biodegradable, in contrast to paraffin, which takes many years to be completely decomposed.
- The production of coconut oil positively affects the economies of the agricultural communities that make it, in spite of some problems associated to low-cost and child labour.
- Waste to PCM the study reveals that there are additional bio-based PCMs which can

be used in combination, for example beef tallow paired in combination with coconut oil palm kernel oil and soyabean oil in addition to other options.

- PCMs are made from waste or byproducts such as fish oils, animal fats waste, pork lard, the fat of chickens, beef tallow plastics, and carbon PCM (CPCM).

Topic 24. A TOOTHY SOLUTION TO STEM CELL HARVESTING

Important for subject: Science and Technology



The bone marrow is until recently been the most widespread sources of stem cells.

- But, other sources such as the umbilical cord, or the adipose tissues are being investigated as well.
- New research on regenerative also known as stem cells therapy, regardless to the patient's age stem cells from the gum or gingival tissue can help to regenerate nerve cells or neuronal cells that are also known as nerve cells.
- This research could help to treat disorders affecting nerves such as Alzheimer's or Parkinson's.

What is gingiva?

- It's very difficult to take cells out of the bone marrow.

- They are derived directly from the knee cap belonging to a person that may not be in good health and is likely suffering from arthritis or other disease that is related to bones.
- The recovery time following the removal of bone marrow is higher than in gingival tissue.
- The extraction of bone tissue is the procedure that is invasive.
- Gingiva has no complications.
- Anyone can give gingival tissue the healing process can take 7 to 10 days.
- As time passes stem cells are prone to grow into tumors over time.
- The same was not the case in the lab, however, growth was derived by gingival tissue.
- The limitation was that when the stem cells were stimulated to create osteoblasts, bone cells or adipose tissue their ability waned as the growing old age of donors.
- In the case of renewal of neuronal cells stem cells that were derived from gingival tissue were consistently effective, regardless of age.
- The use of stem cells in Regenerative therapies stem cells are the primary cells that are used to create other cells.
- They may be stem cells or specialized cells with specific purposes, like nerve cells, blood bones, cells, or cardiac muscle cells.
- For treating cancer the infusion of stem cells either from either a donor or oneself has proven promising.
- Cancer is a condition which kills a lot of cells within an extremely short time.
- To counteract the effects on cancer stem cells fulfill crucial functions of creating healthful cells to replace damaged ones.
- Stem cells were first used in the year 1958 in the work of French cancerologist Georges Mathe, who performed the first bone marrow transplant to assist in saving six Yugoslavian nuclear scientists who had been accidentally exposed to radiation.
- Stem cells can be useful not only in the treatment of cancer but as a means of understanding how diseases develop and impact the body and testing new medicines as per to the Mayo Clinic website.
- Stem cells can come from bone marrow embryos, embryos or fat tissue, as well as the perinatal fluids like umbilical blood.

- Autologous stem cell therapy is the method of treatment that uses your own stem cells for neurodegenerative disorders that are age-related like Parkinson's and Alzheimer's is a great option.
- This will reduce the risk rejection of cells as well as other problems.
- Allogeneic therapy is the utilization of stem cells donated by donors.
- There is a chance of rejection of cells and other complications are present in Covid-19 treatments.
- Interestingly the team has expanded the study to examine whether stem cell-mediated regeneration could help to reverse the damage caused by lung caused to Covid-19-related lung damage.
- The researchers measured improvements in lung health across eight variables, including the presence of blood clots, fibroids as well as an infiltration of immune cells to lung.

Topic 25. IMPROVING RICE YIELD WITH AN ADDITIONAL GENE

Important for subject: Science and Technology

The Green Revolution of the 1960s resulted in a significant increase in the yield of agriculture crops like wheat and rice.

- OsDREB1C gene New Research report points out that providing a Chinese rice cultivar an additional copy of one of its genes has improved the yield of up to 40 percent.
- If a second copy of one gene (called OsDREB1C) is added to rice, it enhances the nitrogen and photosynthesis, increases flowering speed and absorbs nitrogen in more efficient manner which results in greater and more plentiful grains.
- Gene modulation one of the most important aspects is that researchers have used the same gene in a second time but not a other gene from outside.
- This is described best by the term genetic modification.
- This is not an alteration in genetics (GM) and is not its result transgenic one, with elements from a different donor.
- GM crop Regulation in India has excluded crops with specific types of genetic modification from the previous restrictions on commercialization of all genetically modified crops.

- For instance, BT cotton involves the transfer of the gene from the bacterium known as *Bacillus thuringiensis* (BT) to be transferred to normal cotton.
- In India, the Agriculture Ministry has pointed out in the year 2019 that they have permitted the transfer of this gene to normal cotton to produce the BT cotton and then it is manufactured and sold in India and overseas.
- Rice is a primary diet for the majority of the people living in India.
- It is a kharif-type crop that needs high temperatures (above 25 degrees Celsius) along with high humidity.
- It also requires annual rainfall exceeding 100cm.
- In areas that have little rainfall, it can be cultivated with irrigation.
- In the southern states as well as West Bengal, the climatic conditions allow for the cultivation of three or two varieties of rice during an entire year of agriculture.
- The West Bengal farmers grow three varieties of rice, namely "aus", "aman" and "boro".
- A quarter of the total surface of the land that is cropped across India is under the cultivation of rice.
- Leading producer states: West Bengal, Uttar Pradesh, and Punjab. High Yielding States: Punjab, Tamil Nadu, Haryana, Andhra Pradesh, Telangana, West Bengal and Kerala.
- India is the second largest rice producer, second only to China.
- India is the largest rice exporter.
- It shipped 18.75 million tons to more than 150 countries in 2021-22, making \$6.11 billion.
- The Genetic Engineering Appraisal Committee (GEAC) operates under the Ministry of Environment, Forest and Climate Change (MoEF&CC).
- It is accountable for the evaluation of all activities that involve the use of large-scale quantities of dangerous microorganisms, recombinants and other recombinants in as well as industrial production from an environmental perspective.
- It is accountable to evaluate proposals related to releases genes engineered (GE) organisms and their products in the environment, including experiments and field tests.
- GEAC is headed by the Secretary Special/Additional of MoEF&CC and is co-chaired

by an official who is from the Department of Biotechnology (DBT).

Topic 26. WHICH OILS TO USE AND HOW MUCH: DO'S AND DON'TS OF CONSUMING FATS

Important for subject: science and technology

The excess fat in our diet will destroy our heart and liver in the near future, due to our lack of exercise and a diet that is not controlled.

- In terms of quantity, there's more or less agreement: around 3-4 teaspoons of sugar should be consumed every day, which includes the cooking oils used.
- A diet that is completely oil-free can be harmful over the long haul because essential fatty acids found in oils are required by your body.
- Good fat Monounsaturated Fat (oleic acid) Research has shown that one of the fats monounsaturated fat (oleic acid) is consumed in lieu or in addition to other types of fats is highly efficient at lowering blood fats as well as treatment for diabetic patients.
- Source - Although this kind of fat is plentiful in canola oil and olive oil but the people of India have been using an oil similar to mustard, for a long time.
- Other good sources of monounsaturated fat include walnuts, avocados, pistachios and almonds. Sesame is also a good source.
- Polyunsaturated fat The other kind of fat that is considered to be good is polyunsaturated fat. an example of this of this is the omega-3 fats of which fish is an abundant source.
- There aren't any vegetarian options for these healthy fats - walnuts as well as mustard oil, soybean sesame, peanuts flaxseeds and flaxseed oil.
- Chia seeds are a small source of quantities of omega-3 fatty acids.
- Bad Fat: Saturated Fat consumption of saturated fats can carry the risk of coronary artery clogging and heart attacks although recent studies suggest a different view.
- One of the most harmful components that is found in saturated fats can be palmitic acid that are the main component in the dairy products ghee and palm oils that, in addition to raising the likelihood of developing heart disease, can also contribute to the proliferation of cancerous cells.
- All saturated fats are deposited in the liver, which causes the liver to shrink (fibrosis as well as cirrhosis) Sources: Ghee coconut oil, palm oil. Dairy ghee is rich of

saturated fats (60%-80 percent) along with palmitic acid.

- Coconut oil, popular in the southern states, is also abundant in saturated fats as well as palmitic acids.
- It was found to increase the bad cholesterol in blood (LDL) which is the primary cause of blockages in arteries, in six of the seven studies that have been conducted to the present.
- Bhujias and chips that are accessible in India are produced using saturated fat-laden palm oils.
- Fat Trans fats The first of the saturated fats that are responsible to increase liver and heart risk are trans fatty acids.
- The high levels of trans fats (which comprise 30% to 40 percent of certain oils) are extremely harmful to the liver, the heart pancreas, pancreas and blood vessels.
- In fact, this is the most destructive part of oil.
- Research has shown that when we cook food at extreme temperatures with any type of oil the concentrations of trans-fatty acids increase by 100-200 percent.
- These cooking techniques are widespread in Indian households and are commonly used by street sellers and the majority of restaurants.
- Source - Ghee from vegetables-- vanaspati and other similar oils.
- (Vanaspati Ghee is a partially hydrogenated vegetable oil derived from plant sources. It differs from dairy Ghee.) Margarine , bakery products, and in fried, baked, and baked food items.
- Initiatives to cut down on their consumption: FSSAI launched a "Trans Fat Free" logo to promote the voluntary labelling of products to advertise products that are TFA-free.
- The label can be utilized for bakeries and local grocery stores as well as shops selling products that contain TFA in excess of 2 grams per 100 grams/ml.
- FSSAI announced a new mass-media campaign "Heart Attack Rewind" to remove trans fats produced by industrial processes in food in 2022.
- "Heart Attack Rewind" is an extension to an earlier campaign "Eat Right", which was launched in July 2018.
- Edible oil companies have made a commitment to cut down on sugar, salt and trans fats by two percent by 2022 from present levels of 5percent. Swasth Bharat Yatra, an initiative that was launched as part of the "Eat Right" campaign is a Pan-India

Cyclothon to bring people together on the issue of food safety, fighting food adulteration, and promote healthy eating.

- World: WHO launched a REPLACE campaign in 2018 to promote the global elimination of trans-fats from edible oils produced by industrial processes until 2023.

Topic 27. DID ASTEROIDS CARRY THE WATER TO EARTH? RESULTS IN THE HAYABUSA-2 PROBE AND ITS EXPLANATION

Important for subject: Science and Technology

How did the Earth was thought to be covered by bubbles of magma millions of years back transform into the "blue planet and then become covered with water?

- In an article by the scientific journal Nature Astronomy on Monday (August 15) researchers from Japan believe that organic matter and water could have come to Earth from far reaches of our solar system.
- The researchers came up with this theory by studying samples taken from the asteroid, Ryugu.
- That were collected by the Japanese Aerospace Exploration Agency's (JAXA) Hayabusa-2 probe, which taken 5.4 grams of dust and rocks from the spacecraft to Earth in the month of December.

What did Hayabusa-2's mission entail?

- It was the Hayabusa-2 mission was initiated in December of 2014 when the spacecraft set off to the moon for six years to examine Ryugu's asteroid.
- According to the report of Deutsche Welle from 2020, the spacecraft, roughly as big as a fridge has traveled over 5 billion kilometers in its trip.
- The spacecraft reached the asteroid in the middle of 2018, and then positioned two rovers as well as a tiny lander on the surface.
- In the year 2019 the spacecraft fired an impactor onto the surface of the asteroid to create a circular crater that measured about 10 meters, which enabled it to gather samples.
- In the month of December, 2020 Hayabusa-2 launched a tiny capsule that contained dust and rock samples as it was at a distance of 220,000 km away from Earth's atmosphere it safely crashed into the South Australian outback.

- Hayabasu2, the predecessor of Hayabusa, Hayabusa mission, returned samples from the Asteroid Itokawa in the year 2010.

What is an Asteroid?

- Asteroids are rocks which orbit around the Sun and are significantly smaller than planets.
- They are also known as minor planets.
- According to NASA they have 994,383 known asteroids. They are the leftovers of the formation of our solar system 4.6 billion years ago.
- Asteroids are classified into three types.
- The first is the principal asteroid belt that lies between Mars and Jupiter that is thought to contain in the range of 1.1-1.9 millions of asteroids.
- The second category is made up of trojans which are asteroids which have an orbit that is shared with the larger planet.
- NASA mentions the existence trojans in the orbits of Jupiter, Neptune and Mars trojans.
- The year 2011 was the last time they also reported an Earth trojan too.
- The third category includes Near-Earth Asteroids (NEA), with orbits that are very close to Earth.
- The ones that cross Earth's orbit are known as Earth-crossers.
- More than 10,000 asteroids have been identified, of which more than 1400 have been classified as potential dangerous asteroids (PHAs).
- Ryugu has also been classified a PHA and was first discovered in 1999, and named from the Minor Planet Center in 2015.
- It's located at 300 million kilometers away from Earth and took Hayabusa-2 42 months to arrive at it.

Why do scientists study asteroids?

- Asteroids are among the most ancient celestial bodies of the Solar System, scientists study them to discover information about the origins and the history of the sun and planets.
- Another reason for keeping track of asteroids is to search for asteroids that might hit

Earth and lead to possibly dangerous consequences.

- NASA's OSIRIS-REX spacecraft has taken samples of the Asteroid Bennu in October of 2020, that will be returned to Earth in 2023.
- Scientists are fascinated by studying asteroids like Bennu since it hasn't experienced any drastic modifications since its formation thousands of years, and thus, it has chemical compounds and rocks that date to prior to the beginning of our solar system.
- It's also near to that of the Earth.

Topic 28. SEQUENCE FOR A JUST FUTURE: CAN SAFEGUARDS FOR DIGITAL GENOMIC DATA FROM BIODIVERSITY BE ENSURED

Important for subject Environment

Discussions on the best way to control the usage of digital sequence data (DSI) for genetic materials could delay the conclusion of Post-2020 Global Biodiversity Framework under the UN Convention on Biological Diversity (CBD).

- Digital Sequence Information (DSI) This information is basically electronic information about the sequences of genetic material that makes each biological resource distinctive.
- Potentiality of DSI The immense possibilities of DSI was highlighted during the outbreak when the public accesses to the digital version of the genome of SARS-CoV-2 which was provided by China scientists around the world, allowed researchers to create vaccines for COVID-19 with a speed that was unmatched.
- Concerns: Developing countries that are high in biodiversity think DSI offers a loophole which developed countries could circumvent CBD.
- CBD CBD was created three centuries in the past to guarantee that people get the benefits that come from the usage of biodiversity.
- According to CBD every nation is sovereign over the genetic material it has.
- Anyone who wishes to access the resources has to first notify the country and establish mutually agreeable conditions.
- The Working Group that is open-ended to discuss to the Post-2020 Global Biodiversity Framework in Nairobi, Kenya Parties from Africa were clear that a decision regarding benefit-sharing from DSIs is crucial.
- Failure to reach to an agreement could delay the implementation of the framework.
- They recommended the establishment of an account under the multilateral benefit-

sharing system that collects one percent of the retail value of all commercial earnings that result from the use of genes, the traditional knowledge that is related to genetic resources or DSIs.

- The fund, which is managed through the Global Environment Facility, could then be utilized to help in the preservation and sustainably utilizing biodiversity.
- It could also be accessible to nations and communities through a project-based and competitive way to aid in the conservation of biological diversity and sustainable usage.
- Convention on Biological Diversity (CBD) The Convention on Biological Diversity (CBD) is a legally binding treaty to preserve biodiversity, is in effect since 1993.
- It has three main goals Conservation of biodiversity.
- The sustainable utilization of the elements of biodiversity.
- A fair and equitable sharing of the benefits that result from the use genes.
- Nearly every country has ratified it (notably it is the case that the US has signed but has not yet ratified).
- Its CBD Secretariat is based in Montreal, Canada and it is part of the United Nations Environment Programme.
- All Parties (Countries) to the Convention of Biodiversity (CBD) are regularly scheduled to meet and are referred to as Conference of Parties (COP).
- In 2000, an additional accord to the Convention called the Cartagena Protocol on Biosafety was approved.
- It entered into force on September 11, 2003.
- The Protocol will seek to defend biodiversity from potential threats that are posed by living organisms created by modern biotechnology.
- This Protocol, known as the Nagoya Protocol on Access to Genetic Resources and the fair and equitable sharing of the benefits resulting from their Use (ABS) has been adopted by the COP10 by the COP10 in Nagoya, Japan at COP10. It became effective on October 12, 2014.
- It does not just apply to genetic resources protected by CBD and to the benefits that result from their use, but also to old-fashioned knowledge (TK) that are associated with genetic resources protected by CBD and the advantages that come from their use.

- In addition to the Nagoya Protocol on Genetic Resources and the Nagoya Protocol on Genetic Resources, COP-10 also adopted a 10-year plan of action for every country to preserve biodiversity.
- The document is officially referred to by the name of "Strategic Plan for Biodiversity 2011-2020" The document outlined 20 targets that are both ambitious and achievable commonly referred to as the Aichi targets for biodiversity.
- India adopted the Biological Diversity Act in 2002 in order to implement to the requirements that are in the CBD.
- Global Environment Facility It is an independent, operating financial institution. GEF is a multilateral financial institution which provides grants to developing nations for initiatives that help the environmental sustainability and encourage sustainable livelihoods within local communities.
- The GEF was created as a fund within the World Bank in 1991
- In 1992, following the Rio Earth Summit, the GEF was reorganized and transferred from its place in the World Bank system to become an independent, permanent institution.
- Since 1994, it has been a part of the World Bank system.
- World Bank has served as the Trustee of the GEF Trust Fund and provided administration services.
- The institution is located at Washington DC, United States.
- It is focused on six identified priority areas: biodiversity, global waters, climate change the depletion of ozone, land degradation and persistent organic pollutants.
- It supports an active portfolio of more than 200 investments around the world.
- GEF is a financial instrument for: Convention on Biological Diversity (CBD) United Nations Framework Convention on Climate Change (UNFCCC) UN Convention to Combat Desertification (UNCCD) Stockholm Convention on Persistent Organic Pollutants (POPs) Minamata Convention on Mercury India is both a recipient and donor of GEF.

Topic 29. CLIMATE BONDS INITIATIVE

Important for subject: Environment

Climate Bonds Initiative is an international organization that works to mobilize global capital to support climate change.

- This was achieved through the creation and implementation of Climate Bonds Standard and Certification Scheme as well as Policies Engagement in addition to Market Intelligence work.
- It equips our Partner organizations with the knowledge and tools required to control, influence, and create changes.
- Climate Bonds Initiative is a not-for-profit that is focused on the investor.
- Climate Bonds Taxonomy the Climate Bonds Taxonomy is a reference to the climate-aligned properties and projects.
- It's a tool that can be used by investors, issuers, governments and municipal authorities to aid them in understanding what the main investments are that can lead to an economy that is low-carbon.
- The Taxonomy is based on most recent climate science and was developed using an extensive multi stakeholder approach that draws on the efforts in the Technical and Industry Working Groups.
- The Taxonomy seeks to help and become an important source for common green standards across markets around the world to ensure that it helps to create an integrated thematic bond market that can deliver the benefits of a low carbon economy.
- Climate Bonds has been a important contribution to the creation of EU Sustainable Finance Taxonomy.
- The Climate Bonds Taxonomy identifies the project, activities, and assets required to provide an environment that is carbon-free and compatible with the objectives set out in the Paris Agreement.
- It was developed in accordance with the most recent climate science, including research from the Intergovernmental Panel on Climate Change (IPCC) as well as the International Energy Agency (IEA) and has been enriched by the expertise from hundreds of experts all over the globe.

Topic 30. GREAT INDIAN BUSTARDS (GIBS)

Important for subject: Environment

The GIB is among the heaviest birds that can fly

THE GREAT INDIAN BUSTARD
GIB has been put in the Red List of the International Union for Conservation of Nature

DID YOU KNOW?
The Great Indian Bustard was proposed as a candidate for the National Bird of India and was under consideration.

The bird is hunted for its meat in Pakistan

PAKISTAN

It migrates from Rajasthan to Pakistan

THREATS TO THE BIRD

- Annual and perennial non-timber crops
- Renewable energy
- Transportation and power lines
- Human intrusions and disturbance
- Invasive and other problematic species, genes & diseases

2011
The year the species was enlisted in the critically endangered category

150
The approx population of the species in 2018

Height 3.3ft tall
Weight 18 kg

THE GIB IS RESTRICTED TO POCKETS IN

1. Andhra Pradesh
2. Gujarat
3. Karnataka
4. Maharashtra
5. Madhya Pradesh
6. Rajasthan

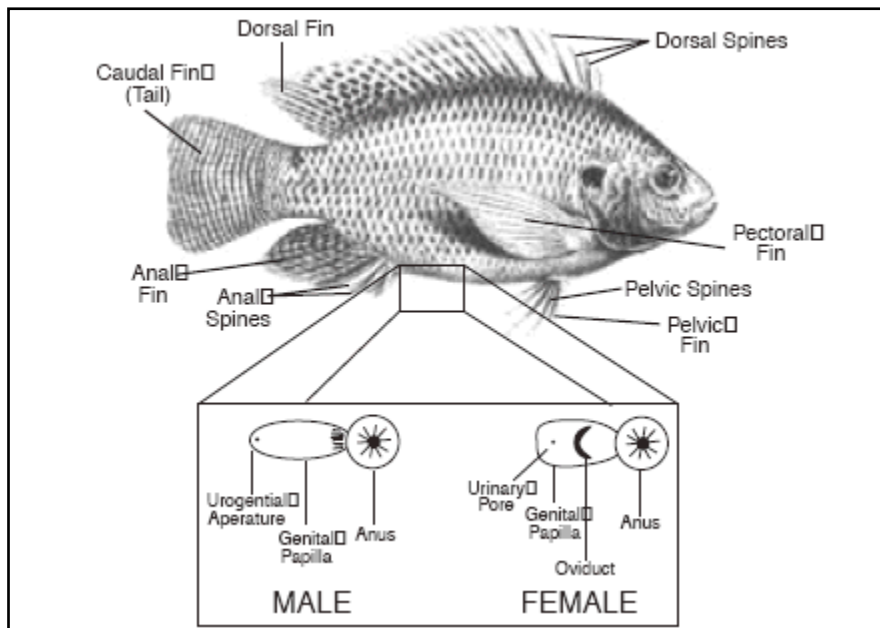
Great Indian Bustards (GIBs) in Rajasthan's Desert National Park (DNP) have laid about 20 eggs during the breeding season. Four females laid two eggs per.

- The Great Indian Bustard is one of the biggest flying birds in the world.
- Scientist Name *Ardeotisnigriceps* Habitats: dry grasslands, scrublands of the Indian subcontinent. The largest population is found within Rajasthan, the Indian states of Rajasthan.
- Distribution India as the only place where bustards can live is now home to less than 150 persons across five States.
- The population today is restricted to Rajasthan in Rajasthan and Gujarat.

- There are also small populations small populations also occur Maharashtra, Karnataka and Andhra Pradesh.
- It is the bird of state of Rajasthan. Protection Status Critically Endangered on the IUCN Red List In Appendix I of CITES, In Schedule I of the Indian Wildlife (Protection) Act, 1972.
- Breeding Sewan grass (*Lasiurus scindicus*) is the grass on which GIBs lay eggs. to lay eggs. GIB breeding center was created in the year 2019 to safeguard and preserve eggs from the wild.
- The breeding season is expected to last until October.
- About 80 percent of the GIB's habitat lies in within the Desert National Park.
- DNP DESERT NATIONAL PARK (DNP) The Rajasthan's Desert National Park (DNP) is where the last GIB remaining wild population is located, making one of the vast Thar desert.
- It was designated a National Park in 1981 to ensure the protection of the habitat of the Great Indian Bustard.
- It is believed that the Thar the desert's east-facing boundary is marked by Aravalli hills and the western border is marked through its lush Indus plains.
- The Great Rann of Kutch forms an elongated border to the south. Meanwhile, the sub-Himalayan plains of the riparian riparian are the northern border.
- The Desert National Park (DNP) covers a total of 3162 sq km, including 1900 sq km located in Jaisalmer and the remaining 1262 sq km located in the Rajasthan's Barmer district.
- The majority of Thar's dry region's vegetation can be classed as thorn forests.
- Local communities, particularly the 'Bishnois' worship and guard Khejri *Prosopis cineraria* that is often found.

Topic 31. TILAPIA

Important for subject: Environment



Tilapia' has emerged to be among the largest and most efficient widely traded food fishes throughout the world.

- Tilapia are mostly freshwater fish found in small ponds, streams, lakes and rivers as well as less frequently living in brackish waters.
- Tilapia is a potential species in warm-water habitats that are newly developed.
- Tilapia have been utilized to combat biological issues associated with certain aquatic plant diseases.
- They are a fan of floating aquatic plants, duckweed, and can also eat filamentous algae.
- Tilapia are extremely low in levels of mercury as they grow rapidly, are lean and short-lived, with an all-vegetarian diet, and they do not build up mercury that is found in prey.
- Tilapia are very low in saturated fat as well as carbohydrates, calories and sodium, making them an excellent source of protein.
- They also have micronutrients like selenium, niacin and phosphorus as well as vitamin B.
- They eat mosquito larvae which can reduce the number of females who are adults, the virus's vector.

- Tilapia's culture is now commercially popular across the world.
- Fishery experts have described the tilapia an "aquatic chicken" due to its rapid growth and low-maintenance cultivation.
- If there is a fish could be described as a global fish, then there's no better name that can be imagined than Tilapia.

Topic 32. UN SUMMIT BEGINS TO DISCUSS AGREEMENT TO REGULATE THE USE OF THE HIGH SEAS

Important for subject: Environment

The United States member countries are gathered at New York to make the first legally binding treaty to regulate the use of high seas.

- It could be the final round of talks for the preservation and sustainable use of marine biodiversity.
- The treaty will aid in the conservation of biodiversity in areas that are not under the jurisdiction of national authorities (BBNJ) which are located beyond the 322-kilometre exclusive economic zones of 322-kilometres.
- The fifth and final round is talks on the international instrument of the UN Convention on the Law of the Sea (UNCLOS). BBNJ Treaty Also called the "Treaty of the High Seas".
- The treaty is an internationally negotiated treaty regarding the conservation and sustainable use of marine biodiversity of territories that are not under the national boundaries.
- The treaty is currently being negotiated in the United Nations. It is currently being designed within the framework of the United Convention on the Law of the Sea (UNCLOS) which is an important international treaty that regulates human activities at sea.
- It was launched in the One Ocean Summit in February 2022 the High Ambition Alliance regarding Biodiversity beyond National Jurisdiction is a coalition of many countries involved in the BBNJ discussions to reach a united and ambitious conclusion at the highest level of political power.
- BBNJ Treaty provides an opportunity to make up for gaps and to address the weaknesses in ocean governance.

- It also offers the chance to implement meaningful actions for dealing with pollution from trans boundary areas on high seas.
- This declaration from the High Ambition Coalition (HAC) is an important step in safeguarding biodiversity in high seas, despite increasing pressure on the ocean.
- The five Regional Seas conventions currently cover Areas Beyond National Jurisdiction (ABNJ) in their geographic scopes: OSPAR Convention, Noumea Convention, CCAMLR Convention, Barcelona Convention as well as the Lima Convention.
- Convention to Protect the marine environment in the Atlantic Ocean of North East (OSPAR Convention) Convention on the Protection of the Natural Resources and Environment in the South Pacific Region (Noumea Convention) Convention for the Conservation of Antarctic Marine Living Resources (CCAMLR Convention) Convention for the Protection of the Mediterranean Sea Against Pollution (Barcelona Convention) Convenio para la Proteccion del Medio Marino y la Zona Costera del Pacifico Sudeste (Lima Convention) Parties and members of the two Regional Seas programmes also started researching problems in relation to biodiversity in zones that do not fall under national jurisdiction.
- Nairobi Convention for the Protection, Management and Development of the Marine and Coastal Environment of the Western Indian Ocean Abidjan Convention for Cooperation in the Protection, Management and Development of the Marine and Coastal Environment of the Atlantic Coast of the West, Central and Southern Africa Region
- UNCLOS was adopted in 1982, and established the basis of ocean governance with the first set of guidelines for oceans and oceans.
- On April 29, 2022, the UN Convention on the Law of the Sea (UNCLOS) was completed for 40 years.
- There are two additional instruments in the Convention that are: the 1994 agreement for the implementation of Part XI of UNCLOS and the 1995 UN Fish Stocks Agreement.
- This treaty BBNJ is the 3rd legal document in the convention.
- It is also referred to in the context of Law of the Sea.
- It separates marine areas into five major zones, namely Internal waters, Territorial

Sea, Contiguous Zone, Exclusive Economic Zone (EEZ) and the High Seas.

- It does not just regulate offshore areas in coastal states but also offers specific guidelines regarding the rights of states as well as duties in the concentric zones.

Topic 33. TAMILS & THE MANY WARS OF INDEPENDENCE: PRE-1857

Important for subject: History

The speech he delivered on Independence Day speech, Tamil Nadu Chief Minister M K Stalin chronicled the life of more than a dozen Tamil liberation fighters all of whom fought those of the British in their respective Dravidian territories before 1857 the year generally regarded as the year of the beginning of the Indian freedom fight.

- Puli Thevar Stalin started with the tale of PuliThevar who was the ruler of Nerkattumseval close to Tenkasi in the southern part of Tamil Nadu, and who in 1755, told his East India Company that "not even a grain can be paid as tax".
- "Maaveeran (Great Warrior)' Marudhanayagam Another historical figure Stalin mentioned was called 'Maaveeran (Great Warrior)' Marudhanayagam a warrior from the 17th century who was the commander of sepoy in the British and served as the "governor" in Madurai as well as fought Hyder Ali in a battle.
- It was 1764 when Marudhanayagam of Panaiyur close to Sivagangai took on Sivagangai, fought the British in a battle that was a lively one which ended in his death when Marudhanayagam was unable to surrender.
- Kattabomman Kattabomman, an 18th-century king of Panchalankurichi in Tamil Nadu, is a well-known name in the state. A person who's brave resistance to the East India Company is often mentioned to incite Tamil pride.
- On 1799, Kattabomman was executed to death for leading a war in the name of the British. In his address, Stalin had quoted Kattabomman famously saying, "Ask me to donate to charity, and I'll.
- I'm not going to ask you to pay taxes, but I'm not going to." He was a participant in the 1 Poligar conflict against British in 1799.
- Sundaralingam as well as Vadivu Sundaralingam the captain of the Kattabomman's Army, as well as his cousin Vadivu who was the one who carried out an attack of suicide at the British.
- VeluNachiyar VeluNachiyar was the first Indian queen to battle against British She

led the women of a battalion to take Sivagangai against the British.

- Kuyili VeluNachiyar's commander in the army, who burned herself to death and then jumped into the arms that belonged to the East India company -- and is often referred to "the "first woman martyr" in Indian history.
- ChinnaMarudhu and PeriyaMarudhu brothers who fought British cannons using the valaris (a traditional weapon that was deadly and designed to look like an oversized boomerang).
- DheeranChinnamalai as well as Pollan DheeranChinnamalai, who was taken to the Gallows in 1805 and his spy and captain, Pollan, who was killed in 1805 by the British.
- Chinnamalai was one of the commanders of Chinnamalai was one of the commanders in Polygar Wars, notably during the Second Polygar War that took between 1801 and 1802. Vellore Mutiny Vellore Mutiny predated the Indian Revolt in 1857 by approximately 50 years.
- The eruption occurred on July 10, 1806 in Vellore which is now Tamil Nadu, and lasted just a few hours, however it was brutal and shaken the British East India Company.
- The first significant revolt by the Indian sepoys of the East India Company.
- The primary causes for the mutiny centered around anger over changes in the dress code for sepoys, which was introduced in November 1805.
- Hindus were forbidden from wearing mark of their religion on their foreheads during duty and Muslims were obliged to cut their beards off and reduce their moustaches.

Topic 34. CULTURAL AND HISTORICAL CONNECTION AMONG INDIA AND THAILAND

Important for subject: History



India and the Southeast Asia region share a long tradition of commercial and cultural relations.

- Devasthan in the course of his trip to Thailand to attend the 9th India-Thailand joint commission meeting, the Minister of External Affairs S.
- Jaishankar Thursday visited the Devasthan in Bangkok. Devasthan Devasthan can be described as being located in the Royal Brahmin Office of the Thai Royal Court and is the official center in Hinduism within Thailand.
- There are many languages spoken in the region, like Thai, Malay, and Javanese are based on words of Sanskrit, Pali and Dravidian source in large amounts.
- It is believed that the Thai dialect is written with script, which is derived from the Southern Indian Pallava alphabet.
- The classic Sanskrit as well as Pali texts of India contain references to the region, using different names like Kathakosha, Suvarnabhumi (the land of gods) and Suvarnavipa (the Golden Island).

- India's links to religion to Thailand The most significant contribution from India in Southeast Asia was in the realm of religion and the ways in which Shivaism, Vaishnavism, Theravada Buddhism, Mahayana Buddhism and later Sinhalese Buddhism came to be used throughout the region.
- The stories that comprise Ramayana along with Mahabharata are frequently used in plays and puppet events.
- Architecturally monuments such as the Borobodur Stupa, in Java and or the Angkor Vat temple in Cambodia, My Son temple in Vietnam are among the finest instances of Indian influence throughout the region.
- Thailand is currently an Buddhist majority nation, and there are numerous temples throughout the country, where Buddhist and Brahmanical Gods are revered together.
- Alongside the popular Brahmanical gods of Ganesha, Brahma, Vishnu and Shiva, those mostly absent from the Indian social-religious settings including Indra are also revered in Thailand.
- The Ramayana is popular as in Thailand in Thailand as Ramakriti (the splendor of Rama) or Ramakien (the story of Rama) It has given a platform for culture within Thailand to both wealthy and commoner.
- Trade Link Trade Link Tamil text found in Takua-pa demonstrates the trade connections to and the Pallava region in South India and southern Thailand.
- A mercantile company that was part of South Indians called Manikarramam had set up a base here and had its own tank and temple, and operated as a self-contained colony.

Topic 35. THE LORD CURZON GATE TMC STATUE-POLITICS RILES OPPN EXPERTS, EXPERTS

Important for subject: History

Lord Curzon became famous because of his decision to divide Bengal in 1905.

- It is an 119-year-old building dedicated to Lord Curzon who was viceroy of India for six years beginning in 1899 located in Bardhaman situated in West Bengal is at the heart of a political squabble.
- Maharaja of Bardhaman Bijay Chand Mahatab constructed the gates in 1903 during the time Curzon went to the city. Curzon, Lord Curzon 1899-1905 Appointment of

the Police Commission (1902) under Sir Andrew Frazer to review police administration.

- Nomination by the Universities Commission (1902) and adoption of the Indian Universities Act (1904).
- Establishment of Department of Commerce and Industry.
- Calcutta Corporation Act (1899). Ancient Monuments Preservation Act (1904). Partition of Bengal (1905).
- Curzon-Kitchener controversy. Younghusband's Mission to Tibet (1904).
- In 1904 The Co-operative Credit Societies Act was approved to inspire the citizens to establish organizations to hold lending and deposits.
- In 1900 The Punjab Land Alienation Act was adopted, which prohibited the transfer of lands belonging to farmers to money-lenders in case that they fail to pay their dues.
- In 1899 it was the year that the British Currency was declared to be legal to be used in India and the pound was declared equal to rupees 15.
- In 1901, the MacDonnell Commission 1901 was the commission to deal with the famine created by the Lord Curzon.

Topic 36. WOMEN ARE THE HEROINES OF INDIA'S STRUGGLE FOR FREEDOM, NAMED BY THE PRIME MINISTER IN HIS I-DAY SPEECH.

Important for subject: History

The ninth Independence Day address to the nation from the walls of the Red Fort, Prime Minister Narendra Modi exclaimed "nari shakti", and asked the people to take a pledge to not engage in anything that diminishes women's dignity, which is also a fundamental obligation in our constitution, article 51A(e).

- The Prime Minister also made a tribute to women who fought for freedom and for demonstrating to that the entire world what is the real meaning behind the Indian concept of "nari shakti".
- The women he mentioned as part of his remarks: laxmibai queen of the state of princely Jhansi
- The queen of Jhansi, Rani Laxmibai, is well-known for her participation in the First War of Indian Independence which took place in the year 1857.

- Her birth name was Manikarnika Tambe on 18th March, 1835 she got married to the King of Jhansi.
- The couple had a son before the death of the king, which was a matter that the British East India Company refused to acknowledge as the legal heir, and determined to add Jhansi.
- Jhalkari Bai, a soldier in the women's Army of Rani Laxmibai Durga Dal She was elevated to becoming one of most trusted advisors to the queen.
- She is famous for putting her personal life in danger to ensure that the queen is out from danger.
- To this day, the tale of her courage is often recalled from the residents of Bundelkhand and she is often portrayed as a symbol of the Bundeli identity.
- Durga Bhabhi Durgawati Devi, who was more popularly referred to by the name Durga Bhabhi, was a revolutionary who took part in the struggle for independence from the colonial regime.
- A member of Naujawan Bharat Sabha, she assisted Bhagat Singh escape disguised from Lahore following the murder in 1928 of British police officer John P Saunders.
- During the train trip that ensued, Durgawati and Bhagat Singh appeared as a couple as well as Rajguru was their main servant.
- As a retribution to the execution of Bhagat Singh, Rajguru, and Sukhdev Durgawati made a failed attempt to take down Lord Hailey, the previous Punjab Governor Lord Hailey.
- The girl was born at Allahabad in 1907 and later married to Hindustan Socialist Republican Association (HSRA) member Bhagwati Charan Vohra. Durgawati together with other revolutionary leaders, also operated the bomb plant in Delhi.
- Rani Gaidinliu Born in 1915 in the present day Manipur, Rani Gaidinliu was a Naga political and spiritual leader who was a fighter against the British.
- She was a part of in the Heraka religious movement, which eventually evolved into an effort to expel the British.
- She resisted the Imperial government and was unable to pay taxes, and urged the people to take the same action.
- The British initiated a manhunt however, she was able to escape arrest, shifting through villages to village.

- Gaidinliu was finally detained in 1932, at just 16 years old, and was later sentenced to life imprisonment. Gaidinliu was freed in 1947.
- The prime minister Jawaharlal Nehru according to the Amrit Mahotsav website Gaidinliu was described as the "daughter of the hills" and gave her the title Rani for her courage.
- Rani Chennamma The queen of Kittur, Rani Chennamma, was one of those who were the very first monarchs to start an armed revolt in the face of British rule.
- Kittur was a state of princely status that is now Karnataka.
- She fought back against an attempts to take control of her power in 1824 following the death of her infant son. Her husband had died, Raja Mallasarja, in 1816.
- She is regarded as one of the few rulers of the day who understood the colonial aims that were imposed by the British.
- Rani Chennamma defeated the British in her first uprising but was taken prisoner and imprisoned in the second attack from the East India Company.
- Begum Hazrat Mahal after the death of her husband Nawab from Awadh Wajid Ali Shah was banished following the 1857 rebellion, Begum Hazrat Mahal, along with her comrades, began to fight the British and seized the control of Lucknow.
- Then she was forced to retreat when the colonial rulers reclaimed the territory.
- VeluNachiyar was a long time before the 1857 revolt, VeluNachiyar waged a war against the British and won.
- The girl was born at Ramanathapuram on 17th December 1780. In 1780 she got married to the King of Sivagangai.
- After her husband's death in battle against the East India Company, she joined the war and was able to win with the help of the kings of neighboring kingdoms.
- "She went on to produce the first human bomb as well as establish the first army of trained women soldiers in the late 1700s," is on the Amrit Mahotsav site.
- She was her army's chief Kuyili is thought to be the one who set her on fire and then entered a British ammunition factory.
- Her successor was the daughter of her in 1790 and then died a couple of years after in 1796.

Topic 37. THE PRINCIPLE OF LIS ALIBI PENDENS AND FORUM NON CONVENIENS

Important for subject: Polity

The Madras High Court is the only court in Karnataka High Court can decide any dispute relating to taking away the Bengaluru medical institution from the scope of a university that is deemed to be in Chennai.

- It is component of the framework in the Constitution and is applicable to the judiciary, too.
- A High Court within one State is not allowed to exercise power that, under normal circumstances, could be performed only through the Supreme Court of the other State.
- The concept in Forumnon conveniens forum non conveniens, a law of common legal principle by which a court recognizes that a different forum or court where the case may be brought is a better location for a legal matter and then transfers the matter to the appropriate forum.
- One of the issues that is frequently raised when applying the principle is the issue of forum shopping, or choosing a court solely to gain an advantage in a court proceeding.
- The concept of lis alibi pendens (a dispute that is pending elsewhere) is used to solve the issue of possibly contradictory decisions.
- When two courtrooms were to be hearing the same case there is a possibility for both courts to come to different conclusions.
- Lis alibi pendens stems from the international comity.
- It allows courts to not exercise jurisdiction if there is a concurrent litigation that is pending in a different area.
- The case is the '2019 ambit notice was issued through the Union Ministry of Education declaring that Bengaluru college would be included in the Bengaluru college will fall under the ambit of Chennai university.
- The state government submitted a writ request in the Karnataka High Court in 2020 in opposition to the '2019 ambit' notification.
- A joint petition was filed against the denial of the '2019 ambit notice The Karnataka High court rejected the claim that a certain portion of claim had arose in Chennai due to the geographical location of the college and, therefore, it was the Madras High

Court could entertain the appeal.

- The Madras High Court is the only court in is the Karnataka High Court can decide on a dispute that is related to the removal of the Bengaluru medical institution from being a university that is deemed to be located in Chennai.
- The court that is able to resolve this lis (dispute) will be Karnataka High Court.

Topic 38. GRAMEEN UDYAMI

Important for subject: Polity

Grameen Udyami Project launched in Ranchi to help in the development of skills and entrepreneurship among tribal youth.

- It also gives a the boost to Skill India Mission
- Grameen Udyami is a unique multiskilling initiative, which is funded by NSDC which aims to educate 450 tribal students across Madhya Pradesh and Jharkhand. The program is currently being carried out across six states: Maharashtra, Rajasthan, Chhattisgarh, Madhya Pradesh, Jharkhand and Gujarat.
- The idea was formulated in the hands of MoS, Shri. Rajeev Chandrasekhar, and tribal MPs. Grameen Udyami Yojana is implemented under Sansadiya Parisankul Yojana.
- The project's training will be carried out on the following Job jobs that are pertinent to our local economic.
- Electrician & Solar PV Installation Technician Plumbing & 2 Wheeler Repair of Masonry & Maintenance IT/ITES incorporating e-Governance Farm Mechanization

Topic 39. PARLIAMENTARY ST CLUSTER DEVELOPMENT PROJECT

Important for subject: Polity

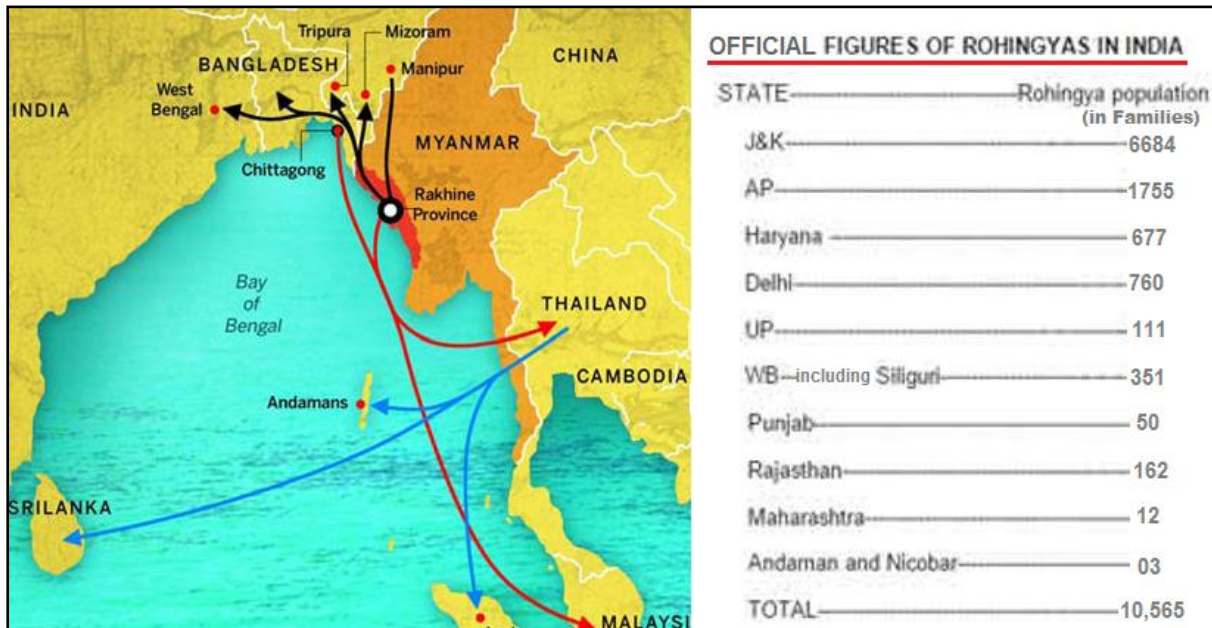
The Honourable MPs' conference were held at Mumbai to examine the improvement of tribes in January 2020.

- Scheduled Tribe organizations called for a "Parliamentary ST Cluster Development Project' that was initiated in the gathering of honourable MPs organized at Mumbai to examine the improvement of tribal communities in January 2020.
- The 49 clusters across 15 states in India have been chosen by 40 tribal MPs from Lok Sabha and Rajya Sabha.
- A development associate is chosen by the MPs for each cluster.

- The following objectives must be met in the course of the program Growth in the local economy and rural areas Increase employment opportunities and reduce forced relocation due to insufficient local opportunities.
- Conservation of natural resources

Topic 40. WHAT IS INDIA'S POLICY ON THE ROHINGYA?

Important for subject: Polity



Officially, approximately 1,200 Rohingyas are identified part of the first group to arrive to Delhi during 2012.

- Following their protest at the UNHCR (UN Refugee Agency) office in Delhi and were issued with refugee ID cards.
- They are the Foreigners Regional Registration Office (FRRO) is responsible for tracing foreigners and the visas they hold, has been asking for the possibility of a new office in the city of Rohingyas by the Delhi government starting in 2021.
- This FRRO operates under the control of the MHA's administrative department the MHA.
- What exactly is the procedure for deportation?
- In accordance to the MHA According to the MHA, illegal immigrants can be recognized, detained, and deported in accordance with the Passport Act, 1920 or the Foreigners Act, 1946.

- The power to determine and deport them have been assigned to States as well as Union Territories.
- If a "foreigner" is arrested by police for being in the country illegally and without a valid passport the person is presented to any local judge.
- If the suspect is found guilty, they could be sentenced to prison for a period of up to three to three months to 8 years.
- When they have completed their sentence, the court can order deportation.
- Foreign inmates are transferred to detention centers until the country of origin checks that they are accepted.
- What is India's position regarding refugees?
- India does not signify to the 1951 UN Convention relating to the Status of Refugees and the 1967 Protocol.
- Foreign nationals who are not legally documented are subject to the laws that are contained in The Foreigners Act, 1946,
- The Registration of Foreigners Act 1939 and The Passport (Entry into India) Act, 1920, and The Citizenship Act, 1955.
- The MHA told the Congress in April 5, of this year that "foreign nationals who enter into the country without valid travel documents are treated as illegal immigrants."
- In the year 2016 the MHA's Mr. Rijiju told the Lok Sabha that "there there is no law of the nation regarding refugees in the present.
- The only Standard Operating Procedures are released from the MHA to handle foreign nationals who are in India that are claiming to refugee."
- The e-FRRO program program aims at creating a centralized accessible online platform for foreigners to access visa-related services as well as to offer faceless, cashless and paperless services to foreigners, providing them with a an easy-to-use experience.
- Through this scheme, people from outside will be eligible to receive more than 27 Visa and immigration associated services within India at the convenience of their home.
- Through the e-FRRO app, foreigners can submit their application online through the portal and receive the service(s) via email or post without visiting an FRO/FRRO offices.

- Constitutional Precedents the Constitution is a treatise on citizenship beginning with the Articles 5 to 11 in Part II.
- It does not contain any long-term nor elaborate specifics on this issue.
- It only names those who were citizens of India on the 26th of January, 1950 (i.e. when the Constitution began).
- The Constitution empowers the Parliament to adopt legislation to regulate matters related to citizenship.
- So, the Parliament passed legislation known as the Citizenship Act, 1955, that was recently changed in 2015.

Topic 41. PIRACY ISSUES

Important for subject: International Relations



The oceans that lie off the oil-rich coast of West Africa are currently the most risky worldwide for shipping as per to an updated report.

- One Earth Future, which publishes annually a State of Maritime Piracy, states that although attacks have decreased significantly in certain regions around the globe but for West Africa they've been on the rise and are more frequent than elsewhere.
- In 2018 there were 112 similar incidents reported in West African waters.
- This isn't just the large tankers that export gas and oil out of Nigeria and Ghana which are targeted.
- At a recent gathering in London the president of Ghana, Faure Gnassingbe from Togo

which is a country that lies between the two giants of the region expressed his concerns about the increase in attacks on shipping vessels in the region.

- The coast off Nigeria witnessed the highest number of attacks in the year 2018.
- This is due in part to "petro-piracy", targeting tankers from Nigeria's gas and oil fields.
- In the past, Horn of Africa used to have a huge piracy issue however, it's been less.
- It's now much less a problem.
- Horn of Africa denotes the region that includes the countries that include Djibouti, Eritrea, Ethiopia and Somalia.
- Ships are targeted across the Caribbean and along the coast in Latin American have, however been increasing.
- Venezuela is in particular is now a hotspot of pirates.

Topic 42. TREATY ON GLOBAL PANDEMIC

Important for subject: International Relations

A draft of an international pandemic treaty that governs preparation, prevention and response to future pandemics is expected to be in negotiation within 18 months, according to Soumya Swaminathan Chief Scientist for the World Health Organization (WHO).

- The origins of the treaty was triggered by the second session of World Health Assembly (WHA) that was held in the month of December 2021 that officially began the process of developing of the previous global agreement.
- It will aid in addressing the global health issues that are prominent by the ongoing COVID-19 epidemic.
- These include fair distribution of health services between and within countries as well as sharing of knowledge and data as well as ensuring the responsibility of the various economies on a basis of capability.
- WHA has established the International Negotiating Body (INB) to develop a WHO convention, agreement, or other international instrument' to allow the entire world to unisonly to respond to as well as recover from health crises in the coming years.

Topic 43. SUPREME COURT HEARS PLEA TO KEEP TABS ON DRUG PRICES

Important for subject: Government Scheme

Supreme Court on Thursday took seriously the plea to provide transparency to the monitoring and pricing of drugs in addition to the recent allegations against the producer of Dolo-650 tablet of engaging into "unethical practices".

- The NGO that submitted the petition claimed that it was the Central Board of Direct Taxes (CBDT) has been accusing the pharmaceutical company that makes Dolo-650 of providing gratuitous gifts to the amount of Rs1,000 million to physicians and other medical experts to market the product.
- The petitioner claimed that the prices that was being charged for Dolo that was up to 500 milligrams was subject to the regulation. Anything over 500 mg isn't subject to the regulation.
- National Pharmaceutical Pricing Authority (NPPA) NPPA was constituted by the Government of India in 1997 as an office attached to the Department of Pharmaceuticals (DoP), Ministry of Chemicals & Fertilizers as an independent Regulator to determine the price of medicines and to make sure that there is accessibility and availability of drugs at reasonable costs.
- It was established to modify or adjust the prices of controlled bulk and prescription drugs and to ensure the availability and price of medicines across the country, as per the Drugs (Prices Control) Order 1995-2013 (DPCO).
- A bulk drug often referred to as Active Pharmaceutical Ingredient (API) is the chemical molecule found in the medicine that gives the product its claims of therapeutic benefits.
- Mandates to enforce and implement the requirements in the Drugs (Prices Control) Order in accordance with the authority conferred to it.
- To handle any legal issues that arise from any decisions made by the NPPA.
- To track the supply of pharmaceuticals, to identify any shortages and to adopt remedial measures.
- To keep track of production of imports and exports market share of specific companies, and profitability of businesses and so on.
- For bulk pharmaceuticals and formulations, and to conduct or fund relevant studies on

the price of pharmaceuticals or drugs.

- The Drug Pricing Regulator Mechanism (DPRM) all medications included in the NLEM are subject to price regulation.
- The NLEM contains medicines which are used to treat infection, fever hypertension, heart disease as well as anaemia.
- It also includes common medicines such as azithromycin, paracetamol and so on.
- It is the Health Ministry prepares a list of medicines that are eligible for price regulation.
- Following this, the Department of Pharmaceuticals incorporates them into Schedule 1 of the DPCO.
- This is where the Standing Committee on Affordable Medicines and Health Products (SCAMHP) will give advice to the price regulator, the National Pharmaceutical Pricing Authority (NPPA) on the review of the list.
- The NPPA is then able to fix the price of the drugs on the Schedule. In accordance with the Drugs (Prices) Control Order 2013, Scheduled drugs, around 15 percent of market, are permitted an increase from the government as in the WPI (Wholesale Price Index) and the remaining 85percent are given an automatic rise of 10% each year.
- The annual increase in the price of the scheduled drugs is monitored and seldom exceeds the threshold of 5%. According to the Drugs and Cosmetics Act 1940 the drugs are listed in Schedules, and rules are enacted for their display, storage sales dispensing, leveling, prescribing, etc.
- The pharma lobby is seeking at least a 10% increase in the price of scheduled drugs, instead of following the WPI.
- Over the last couple of years, the cost of inputs have risen.
- One reason for this is that 60%-80% of China's needs for medicine depend on China.

Topic 44. SAFAIMITRA SURAKSHIT SHEHAR

Important for Subject: Government Scheme

More than 500 towns across India are claiming themselves "SafaiMitra-Surakshit Shehar."

- As a major achievement to put the ending to the manual cleansing of septic tanks and sewers the cities of 500 throughout India declare themselves to be "Safai Mitra

Surakshit Shehar" by meeting safety standards of all sanitation workers involved in these activities.

- The cities have adopted mechanized cleaning of sewers, and when a sanitation worker has to go into a manhole, they are equipped with protection equipment.
- This way they have proved that their cities are capable to attain adequacy in terms of capacity in terms of manpower, equipment and manpower in accordance with MoHUA and provide secure working conditions for SafaiMitras.
- The 'SafaiMitra surakshit Shehar declaration signed by 500 cities is in line with the Swachh Bharat Mission-Urban's long-standing aim of encouraging sustainable sanitation practices and serving as a catalyst to the transformation of every 'manhole in to a 'machine hole'.
- The program was created with the aim of ensuring that there are no fatalities during sanitation-related work'.
- The scheme was launched on World Toilet Day in 2019 the ministry of urban affairs was able to launch the "Safai-Mitra Suraksha Challenge', through which it identified 100 cities with lighthouses which were well-equipped with sanitation facilities and infrastructure.
- States have established Responsible Sanitation Authorities (RSAs) as well as Emergency Response Sanitation Units (ESRUs) at district level.
- They they are now focusing on the training and development for Safai Mitras.

PIONEER ACADEMY



PUNE

PUNE Address :
 204/5, 304/5, 2nd & 3rd Flr., Pinnacle Prestige (Near Duvankar Hotel), Above
 Cosmos Bank, Tlak Road, Sadashiv Path, Pune - 411 030
 Mob : 91453 39324 / 25



THANE

THANE Address :
 201/202/203/204, 2nd Flr., Laizer Arcade, Raghoba Shankar Road,
 Chendani, Thane (W) - 400 601
 Mob : 75060 10635



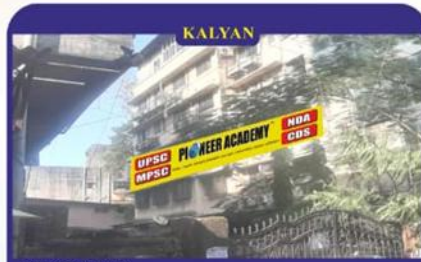
DADAR

DADAR Address :
 306/7/8, 3rd Flr., Blue Pearl Society, Senapati Bapat Road, Plot No. 14, Near
 Janata Cloth Market, Near Dadar Railway Station, Dadar (W), Mumbai - 400 028
 Mob : 93241 69627 / 91375 41508



ANDHERI

ANDHERI Address :
 3rd Flr., Syndicate Chamber, Above Vaibhav Restaurant, Next to
 Better Home Hotel, Opp. Andheri (E) - 400 601
 Mob : 84518 55673 / 70302 92316



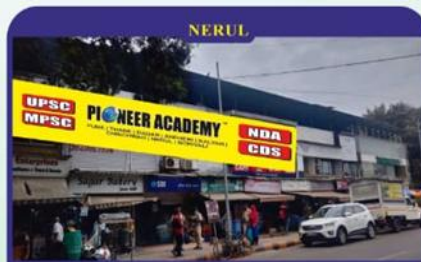
KALYAN

KALYAN Address:
 2nd Flr., 2, Suyash Plaza, Opp. Railway Station, Near Deepak Hotel,
 Kalyan (W) - 421 301
 Mob.: 81691 40960



PIMPRI-CHINCHWAD

PIMPRI CHINCHWAD Address:
 3rd Flr., Kunal Plaza, Mumbai Pune Road, Chinchwad Station,
 Chinchwad, Pune - 411019
 Mob.: 9975459324 / 9503459325



NERUL

NERUL ACADEMY
 16, 20 & 21, 1st Flr., Om Surya complex, Opp. Nerul Railway station,
 Beside Abhudaya Bank, Sector 15, Nerul (E), Navi Mumbai - 400707
 Mob.: 93212 87241 / 93212 89027



BORIVALI

BORIVALI ACADEMY
 313/314, 3rd Flr., V Star Plaza, Chandavarkar Rd., Near Saraswat Bank,
 Sundar Nagar, Borivali (W), Mumbai - 400092
 Mob.: 93212 49713 / 96533 04874

Email : pioneeracademypace@gmail.com
 Website : www.pioneeracademypace.com / .in
 Contact : + 91 75060 10635

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