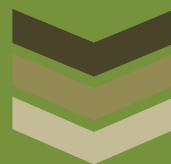


WEEKLY CURRENT AFFAIRS MAGAZINE for



U.P.S.C. - C.S.E.

FEBRUARY-VOL-III-2022

16 February to 22 February



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Success is born of action...

Topic 1. CORPORATE SOCIAL RESPONSIBILITY

Importance for Prelims: Polity



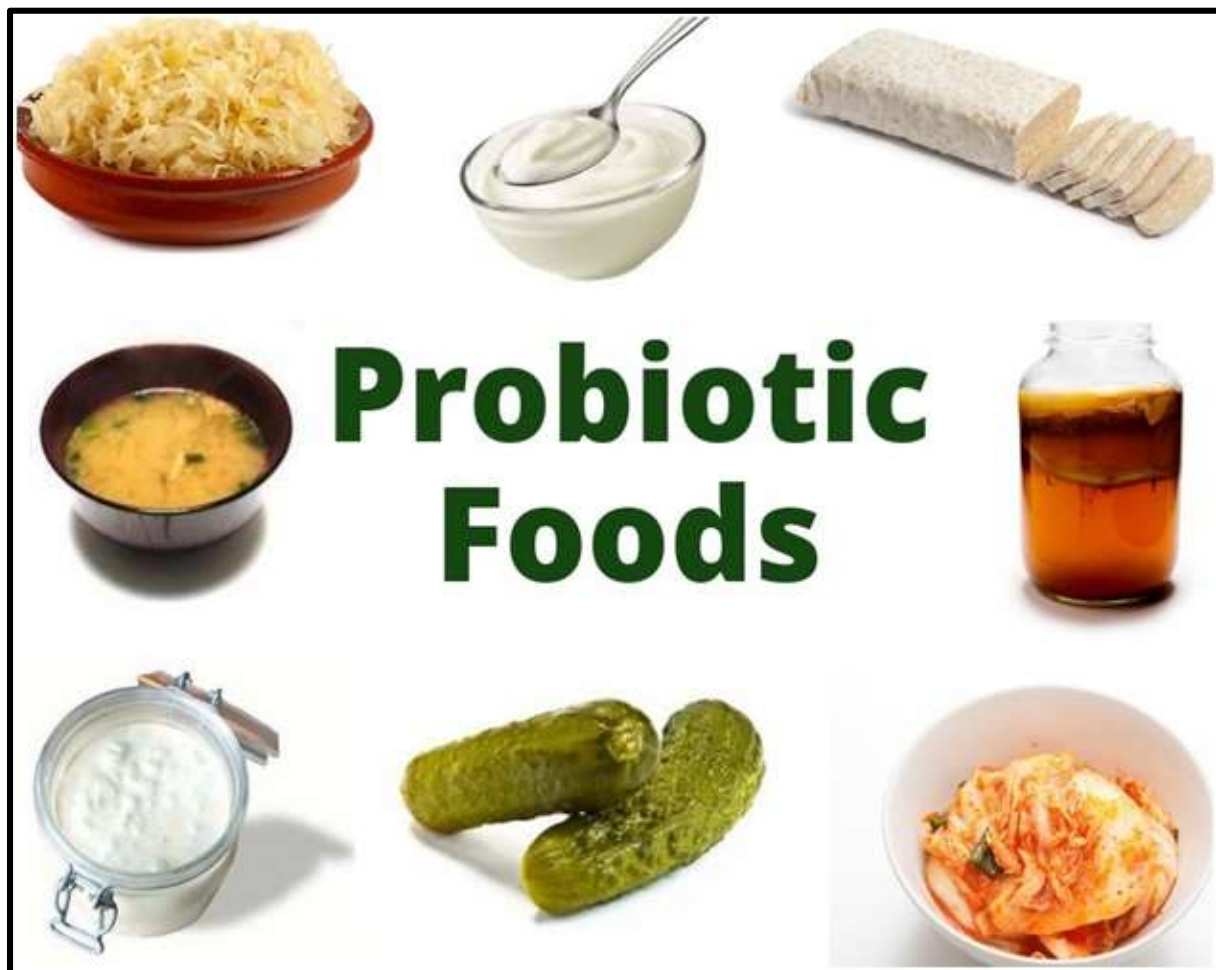
The Centre has currently mandated corporate India to furnish a comprehensive report on their corporate social responsibility (CSR) activities. It's expected to allow the government a comprehensive image of the CSR funds spent and activities carried out.

- **CSR spending:** the companies Act 2013 needs companies with a net price of ₹500 crore or a lot of, or turnover of ₹1,000 crore or a lot of or a net profit net income crore or a lot of throughout the right away preceding 3 years to pay 2 per cent of the typical net income on CSR activities.
- such expenses wouldn't be eligible for deduction under section 37 and section 80G of the income tax Act.
- Tax Exemptions under Section 80D clearly prescribes only 2 instances (i.e. contribution towards the Swachh Bharat Kosh and Clean Ganga Fund) in respect of that deduction under section 80G isn't permissible if total spent by the assessee is in pursuance of CSR.

- In India, the thought of CSR is ruled by clause 135 of the businesses Act, India is that the 1st country within the world to statutorily mandate CSR disbursal beside a framework to spot potential CSR activities.
- The existing framework under the CSR rules already obligates a corporation to file a detailed report of its CSR activities, to be annexed to the board report.
- The Act needs corporations to line up a CSR committee that shall recommend a company Social Responsibility Policy to the Board of administrators and also monitor constant from time to time.
- **Injeti Srinivas Committee:** A High Level Committee on CSR was fashioned in 2018 under the chairmanship of Injeti Srinivas.
- The main recommendations included creating CSR expenditure tax deductible, permitting the balance of unspent balance for a amount of 3-5 years, and positioning Schedule VII of the businesses Act with the United Nations property Development Goals.

Topic 2. PROBIOTICS YOGHURT FOR A LONG & HEALTHY LIFE

Importance for Prelims: Science & Tech



Indian scientists recently known a next-generation probiotic bacterium, lactobacillus plantarum JBC5, from a food product that showed promise in promoting healthy ageing. The team has also developed a food using this probiotic bacterium.

- **Lactobacillus plantarum JBC5:** Lactobacillus plantarum JBC5 showed nice promise in promoting healthy ageing during a model organism, Caenorhabditiselegans, a worm with genetic characteristics similar to those of humans. LPJBC5 improved learning and memory.
- LPJBC5 given resistance against abiotic and biotic stresses like aerophilic, heat, and pathogen.
- LPJBC5 reduced the assembly of reactive oxygen species and improved

mitochondrial perform, thereby reducing apoptosis in worms.

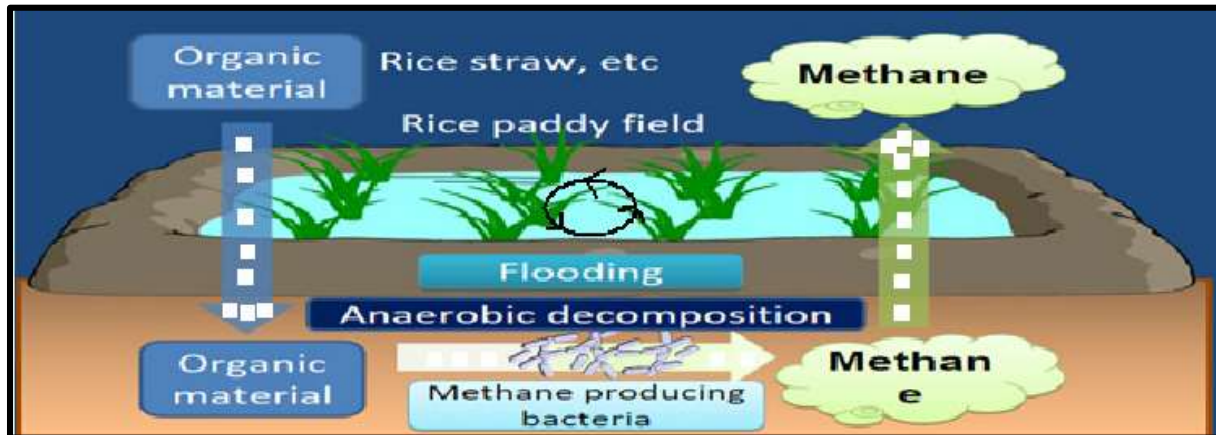
- **Probiotics:** Probiotics are foods that are created of sensible live bacteria or yeasts that naturally keep within the frame.
- Human body could be a host to good and unhealthy microorganism. Whenever one gets an infection, there's additional bacteria that's unhealthy.
- Probiotic supplements add sensible bacteria to the frame.
- **What are Probiotics created of:** These are a mixture of helpful microorganism and yeasts that naturally keep within the frame.
- Bacteria isn't forever a negative addition to the body, it's positive too. Probiotics are a part of a bigger microbiome.
- These microbes are a mixture of: Bacteria: lactobacillus Bifidobacterium Fungi (including yeasts) saccharomyces boulardii Viruses Protozo.

Where do Probiotics board the body?

- The most common place wherever helpful microbes are is that the gut of the frame.
- This principally includes large intestines.
- **They also exist in your:** Gut Mouth channel tract Skin Lungs.

Topic 3. EMISSIONS FROM PADDY CULTIVATION

Importance for Prelims:Agriculture



The Budget has announced chemical-free natural farming among a 5-km-wide corridor on the Ganga, support for millets, inflated domestic production of oilseeds, kisan drones, etc.

- Agriculture contributes 73 of country's total alkane emissions. India isn't coverage nitrous oxide emissions in its national GHG inventories.
- As per the national GHG inventory, agriculture emits 408 million tonnes (mt) of carbon-dioxide equivalent (CO₂e), and rice cultivation is that the third-largest supply (at 17.5%) among Indian agriculture, once enteric fermentation (54.6%) and fertiliser use (19%)
- **RICE CULTIVATION:** Paddy fields are anthropogenic sources of atmospherical nitrous oxide and alkane that area unit 273 and 80-83 times a lot of powerful than dioxide in driving temperature increase in 20 years, severally.
- There is scientific proof that intermittent flooding for rice reduces water and alkane emissions, however will increase inhalation general anesthetic emissions.
- Second, there are emissions because of burning of rice residues, application of fertilisers, production of fertilisers for rice, energy operations like harvesting, pumps, processing, transportation, etc, that

aren't being accounted in GHG emissions by rice production.

- Furthermore, rice cultivation needs regarding 4,000 blockish metres of water per t.
- Economic Survey 2021-22 points out that India is over-exploiting its groundwater resources, notably in its northwestern and southern reaches.
- This is primarily because of paddy cultivation on 44 million hectares.
- Paddy helped win food security, however now's the time to avoid wasting groundwater and therefore the environment by revisiting policies on subsidising power and fertilisers, MSP, procurement, change from carbon-intensive crops like rice to low carbon crops, or for rising farming practices in rice to lower GHG emissions.

Topic 4. ILO CONVENTIONS

Importance for Prelims: Polity

Recently, the CRUSHED Report 2021 discharged by Safe in India (SII) portrays a dismal picture regarding activity safety and health within the machine sector. However, activity safety and health (OSH) has not received due attention from law- manufacturers and even trade unions in India. OSH is an existential human and labour right.

ILO:

- Established in 1919 by the pact of Versailles as an attached agency of the League of nations.
- Became the primary attached specialised agency of the United Nations in 1946.
- **Headquarters:** Geneva, Switzerland The ILO sets international labour standards with conventions, that are sanctioned by member states.
- These are non-binding.
- In ratifying an ILO convention, a member state accepts it as a lawfully binding several countries use conventions as a tool to bring national laws in line with international standards.
- **ILO Conventions:** The eight-core conventions of the ILO are: Forced Labour Convention (No. 29) conclusion of Forced Labour Convention (No.105) Equal Remuneration Convention (No.100) Discrimination (Employment Occupation) Convention (No.111) Minimum Age Convention (No.138) Worst kinds of child Labour Convention (No.182) Freedom of Association and Protection of Right to organised Convention (No.87) Right to Organise and dialogue Convention (No.98) India has not sanctioned the 2 core/fundamental conventions, particularly Freedom of Association and Protection of the proper to Organise Convention, 1948 (No. 87) and Right to Organise and dialogue Convention, 1949

(No. 98). India has ratified International Labour Organization (ILO) conventions, the Labour review Convention, 1947 (C081) and Labour Statistics Convention, 1985 (C160).

Topic 5. INTERNATIONAL MONETARY FUND (IMF)

Importance for Prelims:IR



Sri Lankan government is divided on seeking support from the International fund (IMF) to address its economic crisis thanks to its tight conditions which can additional erode welfare schemes that are crucial to forestall starvation at such a essential time.

- **IMF Lending:** The IMF assists countries hit by crises by providing them support to make breathing room as they implement adjustment policies

to revive economic stability and growth.

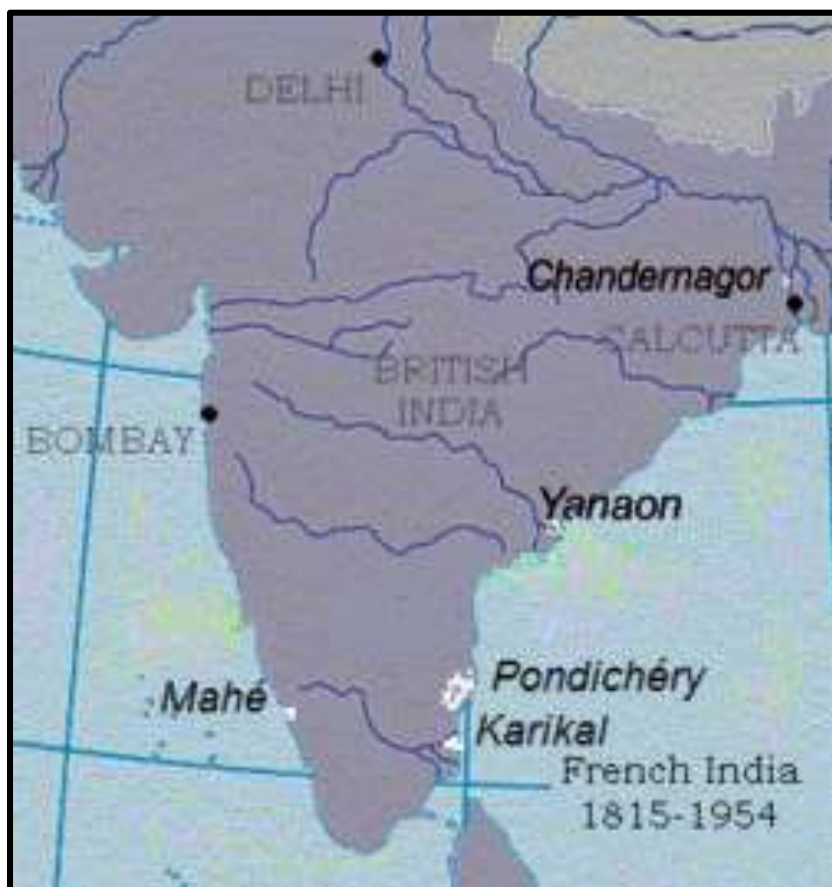
- It additionally provides precautionary funding to help stop and insure against crises.
- The causes of crises are varied and complicated, and might be domestic, external, or both.
- Domestic factors embody inappropriate financial and financial policies, which might cause massive economic imbalances like CAD & financial Deficit; an charge per unit mounted at an inappropriate level, a weak national economy, Political instability and/or weak establishments. •
- External factors embody shocks starting from natural disasters to massive swings in trade goods costs, unforeseen changes in market sentiment.
- The COVID-19 pandemic is another example of external shock moving countries across the world.
- **IMF:** The International fund (IMF) is a company of 189 member countries, every of that has representation on the IMF's executive board in proportion to its monetary importance, in order that the foremost powerful countries within the world economy have the foremost ballot power.
- Membership within the IMF could be a necessity to membership within the IBRD.
- **Quota subscription:** On connection the IMF, every member country contributes a particular total of money, referred to as a quota subscription, that is predicated on the country's wealth and economic performance (Quota Formula).
- Quotas are denominated (expressed) in SDRs.
- It could be a weighted average of value (weight of fifty percent) Openness (30 percent), Economic variability (15 percent), International

reserves (5 percent).

- Special Drawing Rights (SDRs) is that the IMF's unit of account and not a currency.
- The currency worth of the SDR is decided by summing the values in U.S. dollars, based on market exchange rates, of a SDR basket of currencies as well as the S. dollar, Euro, Japanese yen, quid and also the Chinese renminbi (included in 2016). Members' voting power is said on to their quotas.

Topic 6. FRENCH SETTLEMENTS IN INDIA

Importance for Prelims: Indian History



The registry Building, a 2 level structure at Chandernagore inbuilt 1875 and a symbol of French settlement of the colonial town, has been awaiting restoration for an extended time.

- **French Settlements in India:** The French settlement in India began in 1673.
- By the time of Napoleon Bonaparte's defeat in 1816,
- the French had the following institutions in its possession: Pondicherry
ChandernagoreKaraikalMaheYanam
- The lodges at Machilipatnam, Kozhikode and Surat Chandernagore, or Chandannagar, was the primary retail store on the eastern bank of the Hooghly, discovered by the French in 1696.
- The French purchased Chandernagore from the Mughal Governor of

Bengal. Next year they nonheritable Pondicherry from the sultan of Bijapur.

Topic 7. EOS-04

Importance for Prelims: Science & Tech

The Indian space analysis Organisation (ISRO) successfully launched its earth observation satellite EOS-04 and 2 co-passenger technology demonstrator and scientific satellites on Mon from the primary launch pad at the country's only spaceport in Sriharikota, province The orbiter additionally can carry the INS-2DT technology demonstrator satellite, that features a thermal imaging camera and may facilitate among the assessment of land and water surface temperatures except mapping vegetation.

- PSLV-C52/EOS-04 Mission India's Polar Satellite Launch Vehicle PSLV-C52 injected Earth Observation Satellite EOS-04, into an supposed sun synchronous polar orbit of 529 kilometer from Satish Dhawan space Centre, SHAR, Sriharikota. EOS-04
- The 1,700kg EOS-04 could also be a radar imaging satellite capable of providing highquality images below all climate.
- It could also be accustomed capture pictures for agriculture, forestry, flood mapping, soil wetness and geophysics.
- The satellite includes a mission lifespan of 10 years. Satish Dhawan space Centre (SDSC) or Sriharikota range (SHAR): Satish Dhawan space Centre (SDSC) or Sriharikota range (SHAR) could also be a rocket launch centre (spaceport) operated by Indian house analysis Organisation (ISRO). Sriharikota may be a Bengal off the Bay of bengal coast placed among the Shar Project settlement of Nellore district in Andhra Pradesh, India.

Topic 8. INDIA'S FIRST SEMICONDUCTOR FABRICATON UNIT BY 2024

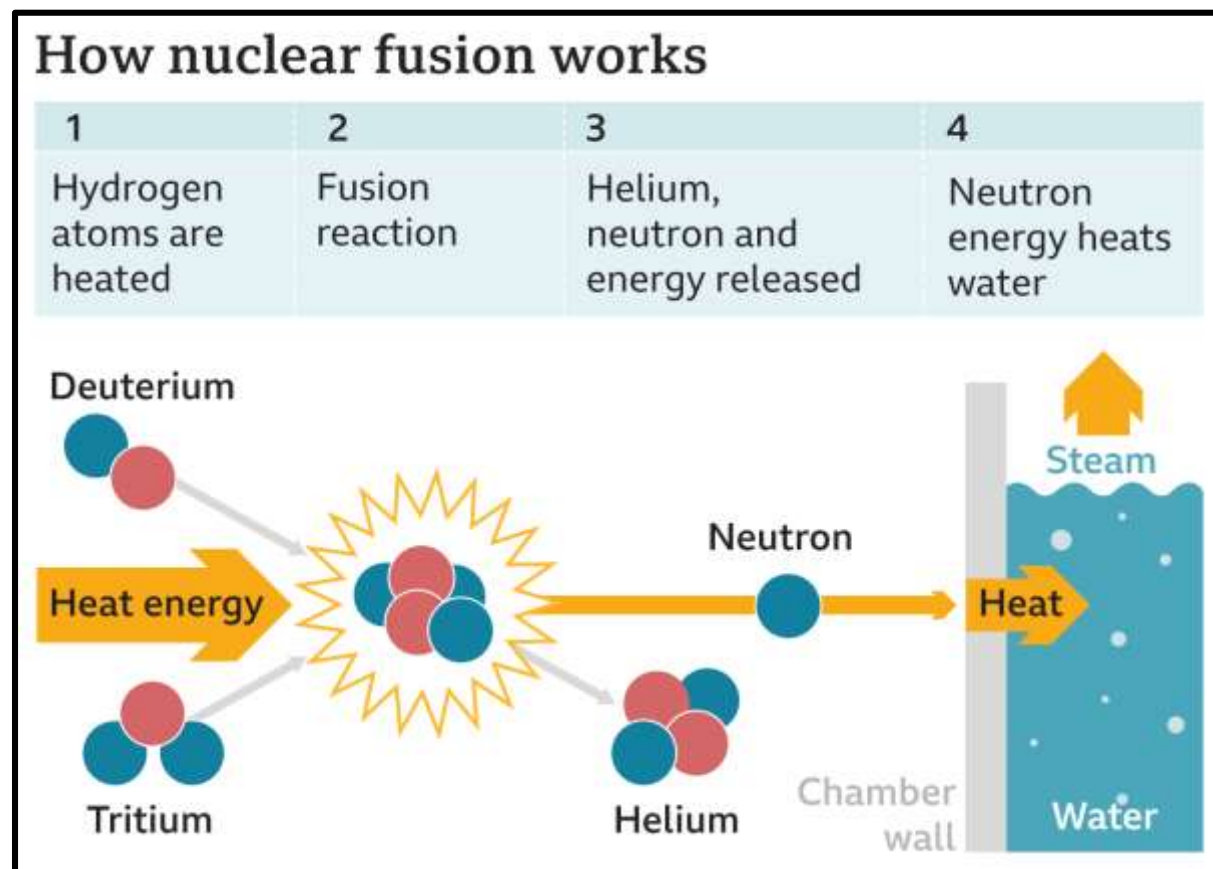
Importance for Prelims: Science & Tech

The Ministry of electronics and data Technology (MeitY) is likely to focus on 2024 for the formal opening of the country's initial semiconductor fabrication unit. As a part of the arrange, the Centre has lined up incentive support for firms engaged in element semiconductor fabs, show fabs, compound semiconductors, element photonics, sensors fabs, semiconductor packaging and semiconductor style.

- semiconductor device fabrication: Semiconductor device fabrication is that the method accustomed manufacture semiconductor devices, generally the metal-oxide-semiconductor (MOS) devices employed in the integrated circuit (IC) chips like fashionable computer processors, microcontrollers, and everyday electrical and electronic devices.
- It may be a multiple-step sequence of photolithographic and chemical process steps throughout that electronic circuits are step by step created on a wafer product of pure semiconducting material.
- Silicon is sort of continuously used, however varied compound semiconductors are used for specialised applications.
- **Semiconductor Chips:** Semiconductors are materials that have a conductivity between conductors and insulators.
- They are often pure components, silicon or germanium likewise as compounds; gallium, arsenide or cadmium selenide.
- These chips ar currently an integral a part of up to date vehicles, household gadgets and essential medical devices like ECG machines.

Topic 9. NUCLEAR FUSION

Importance for Prelims: Science & Tech



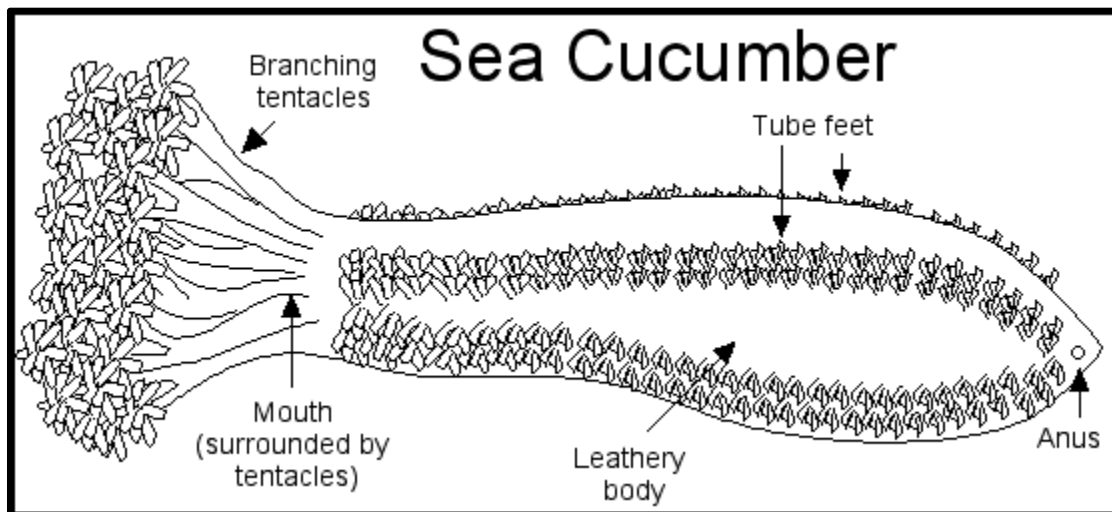
Scientists are making efforts to make a fusion reactor for many decades.

- Nuclear fusion may be a reaction within which 2 or a lot of atomic nuclei are combined to create one or a lot of totally different atomic nuclei and subatomic particles (neutrons or protons).
- The Sun may be a main-sequence star, and therefore generates its energy by nuclear fusion of hydrogen nuclei into helium.
- In its core, the Sun fuses 500 million metric plenty of hydrogen every second.
- Energy released in most nuclear reactions is way larger than in chemical reactions, as a result of the energy that holds a nucleus along is larger than the energy that holds electrons to a nucleus.
- Nuclear Fusion is considered by some scientists to be a possible energy

of the future, notably as a result of it produces little waste and no greenhouse gases.

Topic 10. SEA CUCUMBER

Importance for Prelims: Environment



Demand for sea cucumbers turns India-Sri Lanka waters into trafficking hotspot.

- The sea cucumber work is prohibited in Bharat and restricted beneath a licensing system in land, however growing demand for the animals in East Asia has turned the waters between these South Asian countries into a hotspot for the smuggled trade.
- **Sea Cucumber:** Despite their name, sea cucumbers aren't vegetables; they're echinoderms, from an equivalent phylum of marine animals that has starfish and sea urchins, and go on the sandy bottoms of oceans, wherever they perform the vital ecological operate of nutrient cycling.
- Sea cucumbers are marine invertebrates that go on the seafloor found typically in tropical regions.
- They're named for his or her uncommon oblong form that resembles a fat cucumber.
- They are crucial to maintain the balance of ocean habitats.
- **Significance:** They act like garbage collectors of the ocean world, and that they recycle nutrients, so taking part in a crucial role to keep coral reefs in good condition.

- **Protection: Wildlife Protection Act, 1972:** Schedule I. IUCN Red List: Brown sea cucumber (Endangered), Blackspotted sea cucumber (Least Concern), Blue sea cucumber (Data Deficient), etc.
- In 2020, the Lakshadweep Islands administration created the world's initial conservation area – 239 sq. km – for sea cucumbers.

Topic 11. INFLATION

Importance for Prelims:Economy



Retail inflation supported CPI hit a seven-month high topping 6 per cent in January. In distinction, producers' inflation, supported WPI, born to 12.96 per cent in January.

Inflation:

- Inflation refers to the increase within the prices of most merchandise and services of daily or common use, like food, clothing, housing, recreation, transport, consumer goods, etc.
- Inflation measures the common value change in a very basket of commodities and services over time.
- Inflation is indicative of the decrease in the buying power of a unit of a country's currency.
- In India, inflation is primarily lived by 2 main indices —WPI & CPI that measure wholesale and retail-level price changes, severally.
- **Retail inflation:** per National statistical office (NSO) information, a key reason for the upper CPI was the 'food and potable inflation'.
- The monetary Policy Committee (MPC) uses CPI data to regulate inflation.

- In April 2014, the reserve bank of India (RBI) had adopted the CPI as its key live of inflation.
- **Consumer value Index:** It measures value changes from the attitude of a retail buyer.
- The CPI calculates the price within the consumers of commodities and services like food, medical care, education, electronics etc, that Indian consumers get to be used.

Four forms of CPI are as follows:

1. CPI for Industrial workers (IW).
 2. CPI for agricultural labourer (AL).
 3. CPI for Rural labourer (RL).
 4. CPI (Rural/Urban/Combined).
- Of these, the primary 3 are compiled by the Labour Bureau within the Ministry of Labour and Employment.
 - Fourth is compiled by the NSO within the Ministry of Statistics and Programme Implementation.
 - Base Year for CPI is 2012. Wholesale inflation: Calculated using Wholesale indicator.
 - It measures the changes within the costs of products sold-out and listed in bulk by wholesale businesses to alternative businesses.
 - Published by the office of Economic authority, Ministry of Commerce and business.
 - It is that the most widely used inflation indicator in India.
 - The base year of All-India WPI has been revised from 2004-05 to 2011-12 in 2017.
 - WPI doesn't capture changes within the prices of services, that CPI does.

Topic 12. NATIONAL HEALTH AUTHORITY

Importance for Prelims: Governance



National Health Authority (NHA) is working to integrate the info of Socioeconomic Caste Census (SECC) 2011 beneficiaries with the National Food Security Act (NFSA) portal in order that beneficiaries will get information regarding their entitlements under the AB PMJAY victimisation their ration card number.

National Health Authority (NHA):

- National Health Authority (NHA) is that the apex body to blame for implementing India's flagship public health insurance/assurance scheme known as "Ayushman bharat Pradhan Mantri January Arogya Yojana".
- The scheme provides health assurance of upto ₹5 lakh for a family a year, for secondary and tertiary care-related hospitalisations.
- National Health Authority is that the successor of the National Health Agency.
- An attached workplace of the Ministry of Health and Family Welfare

with full purposeful autonomy.

- NHA is ruled by a board chaired by the Union Minister for Health and Family Welfare.
- It is headed by a Chief executive officer (CEO), an official of the rank of Secretary to the government of India, who manages its affairs.
- The chief executive officer is that the Ex-Office Member Secretary of the board.
- To implement the theme at the State level, State Health Agencies (SHAs) in the type of a society/trust are started by several States. SHAs have full operational autonomy over the implementation of the scheme within the State as well as extending the coverage to non SECC beneficiaries.

Topic 13. ISRO PLACES THREE SATELLITES IN ORBIT IN FIRST LAUNCH OF 2022

Importance for Prelims: Science & Tech

The PSLV-C52 rocket, carrying EOS-04 and 2 different satellites from the Satish Dhawan Space Centre in Sriharikota.

- EOS-04 Satellite: EOS-04, which will be a radar imaging satellite meant to provide prime quality photos of the land under all weather
- It was deposited among the supposed sun synchronous polar orbit.
- **INSPIRESat-1:** INSPIRESat-1, was engineered by the Thiruvananthapuram-based Indian Institute of Space Science and Technology along side the University of Colorado among the US.
- This satellite would study the dynamics of the higher atmosphere.
- It in addition carries an X-ray spectrometer for locating out solar flares.
- **INS-2TD:** INS-2TD, could also be a technology demonstrator for the first India-Bhutan joint satellite that is scheduled to be launched next month.
- The two countries had signed a space agreement last year, and its initial outcome would be the launch of BhutanSat, or INS-2B, on a PSLV rocket in March.
- INS-2TD options a thermal imaging camera meant for earth observation functions like assessment of land and water surface temperature, and identification of forest and tree cover.

Topic 14. GEOSPATIAL SECTOR

Importance for Prelims: Science & Tech

February 15, 2022 is marked as the 1st anniversary of the new guidelines that took effect to completely de-regulate the geospatial sector for Indians.

Geospatial Policy 2021

1. **Geo-Spatial Data:** Geospatial data is data about objects, events, or phenomena that have a location on the surface of the earth.

It combines Information on:

1. Location,
2. Attribute (the characteristics of the object, event, or phenomena concerned),
3. Temporal or time.

2. **New Policy:**

1. **Open Access:** to its geospatial data and services, including maps, for all Indian entities, with the exception of sensitive defence or security-related data.

2. **Restrictions Removed:** There shall be no requirement for security clearance, licence or any other restrictions.

3. **Reason for Deregulation of Geo-Spatial Data:**

1. **Delayed Projects:** System of acquiring licenses or permission, and the red tape involved, took months, delaying projects,

2. **Lack of Data:** There is also a huge lack of data in the country which impedes planning for infrastructure, development and businesses which are databased.

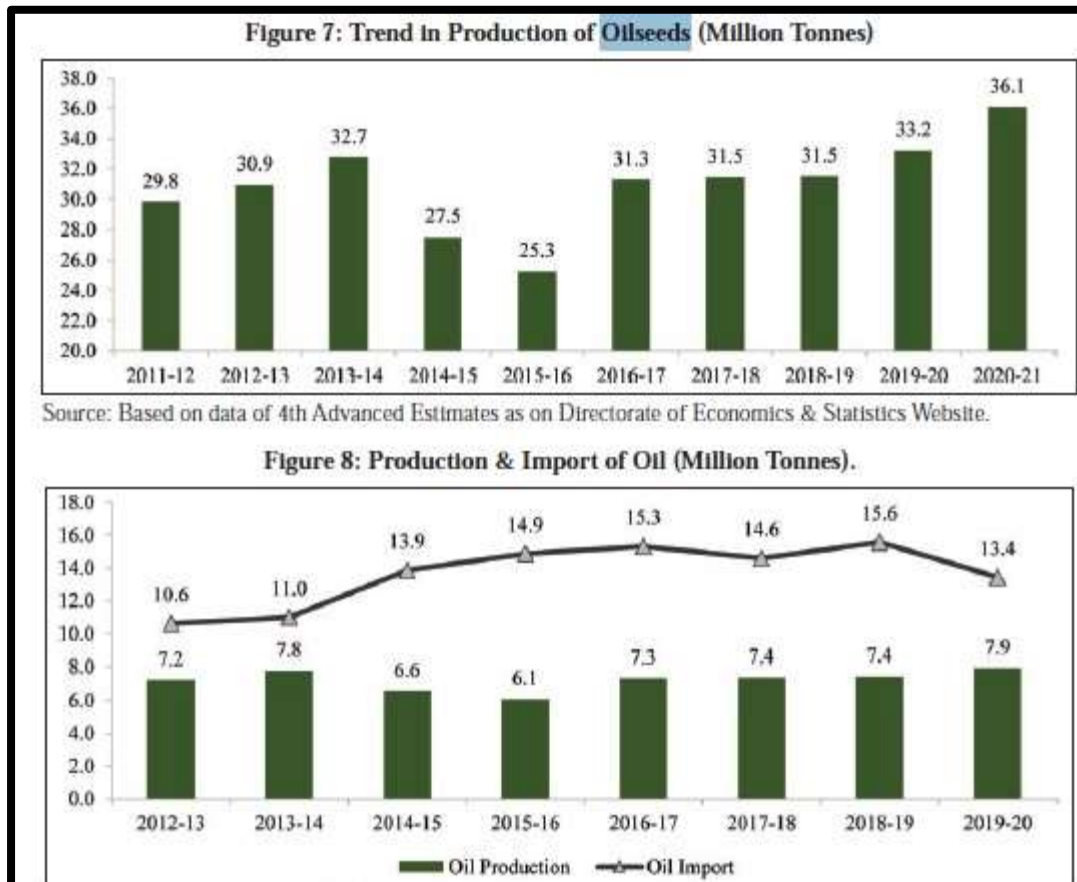
3. **Changing Needs:** Geo-spatial data has now become imperative for the government in planning for infrastructure, development, social development, natural calamities as well as the economy, with more and more sectors such as agriculture, environment protection, power, water, transportation, communication, health (tracking of diseases, patients, hospitals etc) relying heavily on this data

4. **Global Push:** Large amounts of geo-spatial data are also available on global

platforms, which makes the regulation of data that is freely available in other countries.

Topic 15. AGRI CESS ON CRUDE PALM OIL

Importance for Prelims:Economy



The central government has reduced agri-cess for crude palm oil (CPO) from 7.5% to five with result from February 12.

- This can give relief to customers and facilitate keep a check on from now on rise within the costs of domestic edible oils.
- **Agriculture Infrastructure and Development Cess (AIDC):** Agriculture Infrastructure and Development Cess (AIDC) was planned within the Budget 2021-22.
- To raise funds to finance spending on developing agriculture infrastructure aimed to spice up production and farm output potency.
- The new cess to be levied on 29 merchandise, outstanding among that are gold, silver, imported apple, imported alcohol (excluding beer), imported pulses, imported palm oil, imported urea, and petrol/diesel

together with branded ones.

- **Cess:** Cess could be a special-purpose tax levied over and higher than basic tax rates.
- Drawing power from Articles 270 and 271 of the Constitution, the Centre collects cess and deposits it within the Consolidated Fund of India.
- The money collected is then transferred to a separate fund to be used for specific purpose.
- But, this cess and surcharge money isn't a part of the divisible pool, from that devolution of Central taxes takes place to the States.

Topic 16. PUBLIC ORDER

Importance for Prelims: Polity

The Karnataka high court is hearing a challenge to the constitutionality of the state government's ban on students sporting a hijab in educational establishments. whether or not the state will justify the ban on the bottom that it violates 'public order'.

What is public order?

- Public order is one among the 3 grounds on that the state will prohibit freedom of faith.
- Public order' is additionally one of the grounds to restrict free speech and different basic rights.
- Article 25 of the Constitution guarantees to all or any persons right to freedom and conscience and also the right freely to profess, practise and propagate religion subject to public order, morality and health.
- Public order is often equated with equated with public peace and safety.
- According to List 2 of the Seventh Schedule of the Constitution, the facility to ordain on aspects of public order rests with the states.
- Public order is an aggravated style of disturbance that's a lot of more than a law and order issue.

How has public order been taken by courts?

- In Ram Manohar Lohia vs State of Bihar (1965), the Supreme Court command that within the case of 'public order', the community or the public at large ought to be full of a selected action.
- "The dispute of law forever have an effect ons order however before it will be aforementioned to affect public order, it should have an effect on the community or the public at large.
- One has got to imagine 3 concentric circles, the most important representing 'law and order', following representing 'public order' and

also the smallest representing 'security of State'."

Topic 17. NATIONAL STOCK EXCHANGE (NSE)

Importance for Prelims:Economy

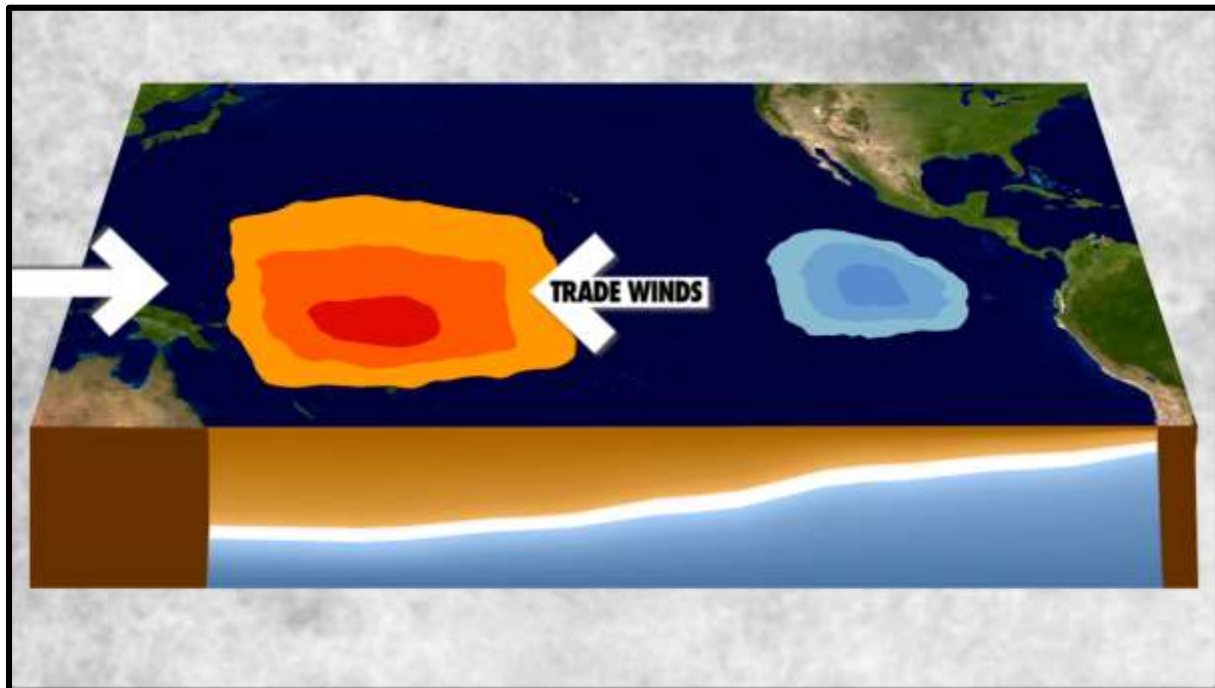
In April 2019, SEBI's investigations unearthed proof of gross negligence and a whole disregard for public and capitalist interests at the NSE.

- **NSE:** National stock market of India restricted (NSE) is that the leading stock exchange of India, situated in Mumbai, Maharashtra.
- The National stock exchange of India limited (NSE) is India's largest money market.
- NSE was established in 1992 because the initial dematerialized electronic exchange within the country.
- Incorporated in 1992, the NSE has developed into a complicated, electronic market, that ranked fourth within the world by equity trading volume.
- NSE was the primary exchange in India to produce trendy, absolutely automatic electronic trading.
- The NSE is that the largest private wide-area network in Bharat.
- The smashing fifty is that the flagship index on the National stock exchange of India Ltd. (NSE).
- The Index tracks the behavior of a portfolio of blue chip firms, the most important and most liquid Indian securities.
- It includes 50 of the close to 1800 companies listed on the NSE.
- NSE is ranked 4th in the world in money equities by variety of trades as per the statistics maintained by the planet Federation of Exchanges (WFE) for the calendar year 2021.
- It is regulated by SEBI.
- The Securities and Exchange Board of regulatory authority India (SEBI) is that the regulatory authority established under the SEBI Act 1992 and is that the principal regulator for Stock Exchanges in India.

- Difference between NSE & mad cow disease mad cow disease (Bombay Stock Exchange) NSE (National Stock Exchange) concerning it's the oldest stock exchange in India.
- It is comparatively young & the largest stock exchange.
- Founded in 1875 1992 Benchmark Index Sensex 30 smashing 50 Total Listed companies around 7400 around 1800

Topic 18. La-NINA

Importance for Prelims:Geography



The Australian Bureau of Meteorology (BoM) has cited climate models and observations to recommend that the 2021–22 La Nina development within the Equatorial East and Central Pacific, that drove a successful monsoon for Bharat last year (2021).

- El Nino and La Nina are advanced weather patterns ensuing from variations in ocean temperatures within the Equatorial Pacific Region.
- They are opposite phases of the El Nino-Southern Oscillation (ENSO) cycle.
- The ENSO cycle describes the fluctuations in temperature between the ocean and atmosphere within the eastern Equatorial Pacific.
- El Nino may be a climate pattern that describes the bizarre warming of surface waters within the eastern tropical Pacific.
- It is that the “warm phase” of a larger phenomenon known as the El Nino-Southern Oscillation (ENSO).
- It happens a lot of oft than La Nina.

- La Nina, the “cool phase” of ENSO, may be a pattern that describes the unusual cooling of the tropical eastern Pacific.
- La Semitic deity events could last between one and 3 years, not like El Nino, that typically lasts no quite a year.
- La Nina is characterised by lower-than-normal air pressure over the western Pacific.
- These low-pressure zones contribute to redoubled precipitation.
- In the ‘La Nina year’, precipitation related to the summer monsoon in Southeast Asia tends to be larger than normal, air pressure in northwest Bharat and Bangladesh.
- It typically brings in colder than normal winters in India.

Topic 19. CHEETAH TRANSLOCATION

Importance for Prelims: Geography

A team of 5 specialists can leave for Namibia February 17, 2022, to terminate details on translocating African cheetahs to India.

- The cheetah translocation project aims to bring African cheetahs to India, wherever the Indian cheetah was declared extinct in 1952.
- The cheetahs are sourced primarily from South Africa and Namibia.
- The cheetahs are delivered to the Kuno-Palpur national park in Madhya Pradesh's Sheopur and Morena districts.
- India had tried an international Asiatic cheetahs from Iran however was refused.
- According to a recent statement by an Iranian government official, there are only 12 Asiatic cheetahs left within the world.
- The cheetah Conservation Fund is an international organisation dedicated to saving cheetahs within the wild.
- cheetahs are listed as "Vulnerable" by the International Union for Conservation of Nature (IUCN) Red List of present Species Asiatic & African cheetah: African Cheetah Asiatic Cheetah environment Around 6,500- 7,000 African cheetahs gift within the wild.
- Less than 100 ,found only in Iran. Physical Characteristics larger in size as compared to Asiatic cheetah. Smaller and paler than the African cheetah. Has additional fur, a smaller head and a extended neck.
- Usually have red eyes and that they have a more catlike look.
- IUCN standing Vulnerable Critically endangered CITES standing Appendix-I Appendix-I

Topic 20. INDIAN FEDERATION

Importance for Prelims: Polity

Prakash Javadekar writes: because the Constitution says, India may be a Union of states. however it's a Union that's indestructible.

- **The Union and its Territory:** part I of Indian Constitution is titled The Union and its Territory.
- It includes articles from 1- 4.
- **ARTICLE 1 : NAME AND TERRITORY OF THE UNION** (1) India, that's India, shall be a Union of States. (2)The States and therefore the territories thereof shall be as per the first Schedule.
- (3) The territory of India shall comprise – (a) the territories of the States; (b) the Union territories per the primary Schedule; and (c) such different territories as is also acquired.
- No where ever below half I, it's mentioned that India may be a federal state.
- It rather uses the phrase “Union of States”.
- India as a union is indestructible so as to protect the sovereignty, integrity and unity.
- Units or states at intervals the union cannot secede as there's no provision for it below the Constitution.
- In order to do so, it should pass a Constitutional change below Article 368.
- Thus proving however the union is indestructible.

Topic 21. BT BRINJAL

Importance for Prelims: Science & Tech



বারি বিটি বেগুন-১ (উত্তরা)
BARI Bt Begun 1



বারি বিটি বেগুন-২ (কাজলা)
BARI Bt Begun 2



বারি বিটি বেগুন-৩ (নয়নতারা)
BARI Bt Begun 3



বারি বিটি বেগুন-৪
(ISD006)BARI Bt Begun 4

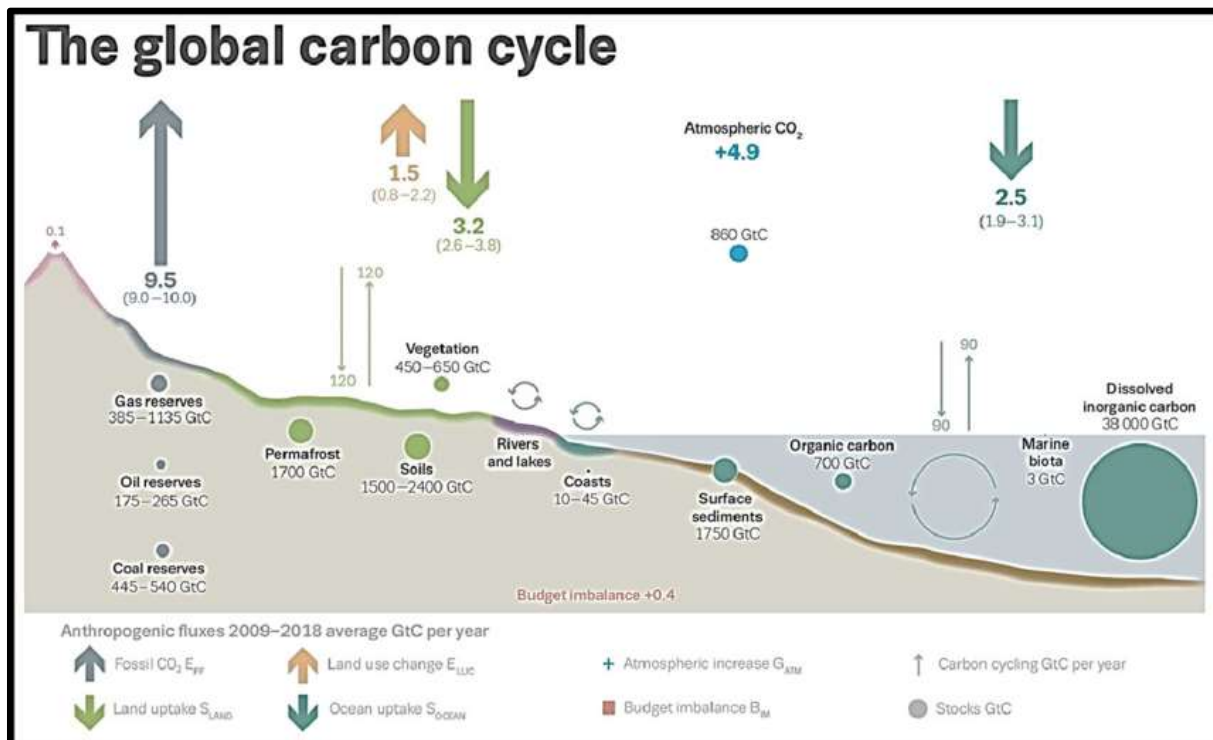
On Thursday, the pro-GM crop movement are going to be re-launched in Maharashtra yet again. Since 2019, thousands of farmers are openly sowing and cultivating herbicide-tolerant Bt (HTBt) cotton and Btbrinjal.

- To date, the Centre has approved only gram cotton for industrial cultivation in India.
- Under Section 22 of the Food Safety and Standards Act, 2006, gram foods don't seem to be allowed to be manufactured, foreign or sold in India unless approved under the Act.

- Legally, sale, storage, transportation and usage of unapproved gram seeds could be a punishable offence under the foundations of Environmental Protection Act 1989.
- Also, sale of unapproved seeds will attract action under the Seed Act of 1966 and also the Cotton Act of 1957.
- BtBrinjal: Btbrinjal was developed by Mahyco (Maharashtra Hybrid Seeds Company) unitedly with the Dharwad University of Agricultural Sciences and also the Tamil Nadu Agricultural University. BtBrinjal could be a transgenic brinjal created by inserting a sequence cry1Ac from the soil bacterium bacillus thuringiensis into brinjal.
- This genetically changed brinjal provides resistance against insects like the brinjal Fruit and Shoot Borer (Leucinodesorbonalis) Bt Cotton: Developed by U.S. large Bayer-Monsanto, it involves insertion of 2 genes viz 'Cry1Ab' and 'Cry2Bc' from the soil bacterium bacillus thuringiensis into cotton seeds.
- This modification codes the plant to provide protein toxic to heliothis caterpillar (pink bollworm) therefore creating it immune to their attack.
- Herbicide Tolerant Bt (HTBt) Cotton: The HTBt cotton variant adds another layer of modification to Bt Cotton, creating the plant immune to the herbicide glyphosate. HtBt Cotton involves the addition of another sequence, 'Cp4-Epsps' from another soil bacteria, agrobacterium tumefaciens to create it herbicide resistant.

Topic 22. GLOBAL CARBON BUDGET

Importance for Prelims: Environment



The working group II report of the IPCC's Sixth Assessment (AR6), to be free at the tip of the month, can strengthen science on the links between diverseness loss and climate change: UN environment Programme (UNEP)

- **Global carbon Budget:** the world Carbon Budget is created by 76 scientists from 57 analysis institutions in fifteen countries operating below the umbrella of the global Carbon Project (GCP).
- The budget provides an in-depth cross-check the number of fossil fuels that nations round the world burn and wherever it finishes up.
- **About global Carbon Project:** the global Carbon Project may be a world research project of Future Earth and a quest partner of the world Climate research Programme.
- The world Carbon Project was established in 2001 by a shared partnership between the International Geosphere-Biosphere Programme (IGBP), the International Human Dimensions Programme on global

Environmental change (IHDP), the globe Climate research Programme (WCRP) and Diversitas.

- This partnership entrenched the planet Systems Science Partnership (ESSP) that afterwards evolved into Future Earth.
- It was fashioned to work with the international science community to ascertain a standard and reciprocally in agreement knowledge base to support policy debate and action to bog down and ultimately stop the rise of greenhouse gases within the atmosphere.
- The phylogenesis climate change may be a reality has targeted the eye of the scientific community, policymakers and therefore the general public on the rising part concentrations of the most greenhouse gases, carbon dioxide (CO₂), methane (CH₄), and nitrous oxide (N₂O).
- The GCP has approached this challenge by focusing comprehensively on the global biogeochemical cycles that govern these 3 greenhouse gases, together with their natural and human drivers, and opportunities for low carbon pathways.

Topic 23. RUSSIA- UKRAINE ISSUE

Importance for Prelims:IR



Russia has declared withdrawal of some troops from the Ukraine border, however US concerns stay round the Russia-to-Germany Nord Stream 2 gas pipeline.

- Nord Stream 2 is an subsurface Gas pipeline from Russia to Germany. It bypasses country therefore deny its transit fee for Russia's Gas exports. Some EU members have security concerns regarding Russia's presence in Baltic Sea.
- US fears that it may offer Russia too much leverage in Europe and increase threat of Ukraine Invasion by Russia.
- **Nord Stream 2 Pipeline:** this can be a 1,200-km pipeline that runs from Ust-Luga in Russia to Greifswald in Germany through the Baltic Sea.
- It can carry 55 billion cubic metres of gas annually.
- It was decided to make this pipeline in 2015.

- Nord stream 1 system is already completed & practical since 2011 and beside NS2P, it'll offer 110 billion cubic metre of gas a year to Germany.
- Russia's economy is especially obsessed with exports of oil & gas and Europe is its largest buyer.

Topic 24. EASE OF DOING BUSINESS (EoDB)

Importance for Prelims: Economy

A research report by think factory ORF identifies a staggering 26,134 imprisonment clauses within the thousands of laws that govern businesses in India. according to the report, “Of the 1,536 laws that govern doing business in India, more than 0.5 carry imprisonment clauses.

- **Ease of Doing Business:** The Doing Business Report is that the flagship publication of the world Bank group that benchmarks business laws in 191 economies.
- The Doing Business Report measures laws that enhance business activity and people that constrain it.
- The easy Doing Business (EoDB) index could be a ranking system established by the world Bank group whereby the ‘higher rankings’ (a lower numerical value) indicate higher, sometimes easier, laws for businesses and stronger protections of property rights.
- The easy doing business ranking is a sign of associate economy’s position relative to it of different economies.
- In India, these indicators relate to business laws for little and medium sized firms set in Delhi and Mumbai supported standardized case scenarios.
- **The indicators are from eleven areas of business regulation such as:** beginning a Business, handling Construction Permits, obtaining Electricity, Registering Property, obtaining Credit, protective Minority Investors, Paying Taxes, mercantilism across Borders, imposing Contracts, and resolving insolvency.

Topic 25. UNIVERSAL SERVICE OBLIGATION FUND (USOF)

Importance for Prelims: Governance

Reliance Jio has asked the telecom regulatory authority of India (TRAI) to prevent collecting from telecom operators contributions to the Universal Service Obligations (USO) fund till the existing corpus is utilised.

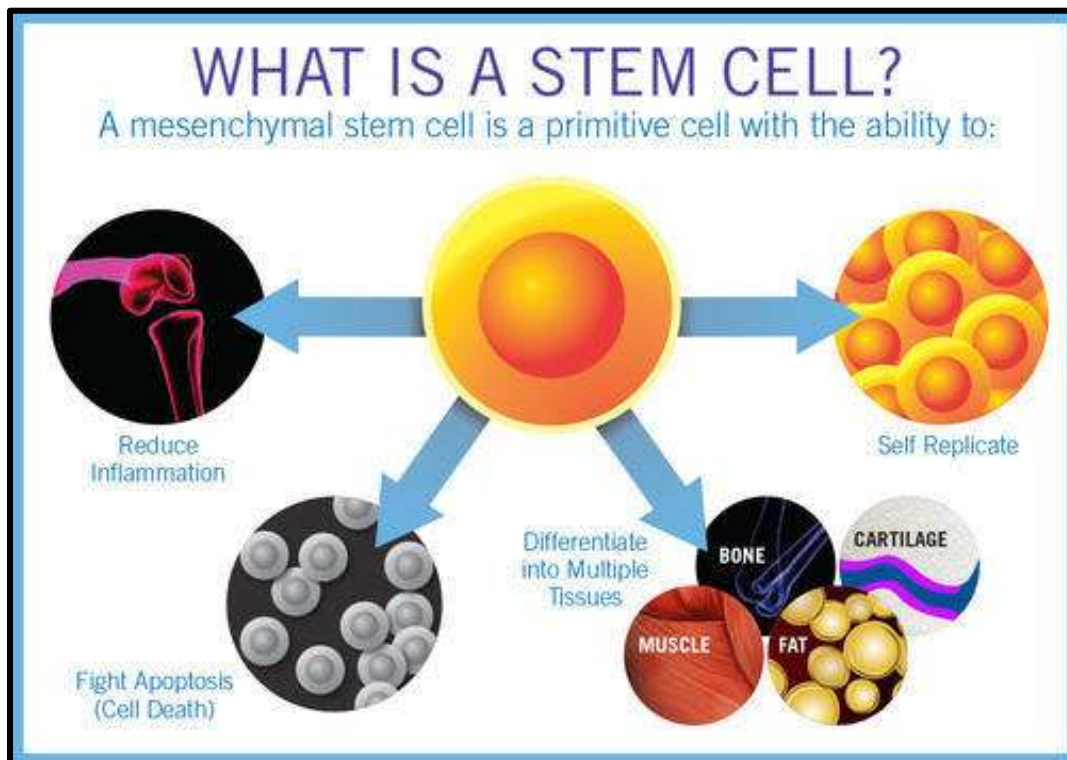
- The Indian telecom sector could be a heavily taxed sector among the Asian countries.
- The contribution to the USO Fund by telecom service suppliers is equivalent to 5 per cent of AGR paid on quarterly basis.
- **USOF:** The Universal Service Obligation Fund (USOF) was shaped by an Act of Parliament, was established in April 2002 under the Indian Telegraph (Amendment) Act 2003.
- It aims to supply funding for the supply of telecom services in commercially unviable rural and remote areas of the country.
- It is an connected office of the Department of telecom, and is headed by the administrator, who is appointed by the central government.
- USOF could be a non-lapsable Fund.
- The Levy amount is attributable to the Consolidated Fund of India.
- The fund is created available to USOF when due appropriation by the Parliament.
- The National optical fibre Network (NOFN)/ Bharatnet that aims to attach all the two,50,000 Gram panchayats within the country and supply 100 Mbps property to any or all gram panchayats (GPs) was funded by the Universal Service Obligation Fund (USOF).
- **TRAI:** The telecom regulatory authority of India (TRAI) was established by the medium regulatory authority of India Act, 1997.
- TRAI regulates telecom services as well as fixation/revision of tariffs for telecom services that were earlier unconditional within the Central

Government.

- The head office of the medium regulatory agency of India (TRAI) is found at New Delhi. The recommendations of the TRAI aren't binding upon the Central Government.
- The TRAI Act was amended in 2000 that established a Telecommunications Dispute Settlement and appellate tribunal (TDSAT) to require over the adjudicatory and disputes functions from TRAI.

Topic 26. STEM CELL THERAPY

Importance for Prelims: Science & Tech



A U.S. patient with leukemia has become the primary woman and the person thus far to be cured of HIV when receiving a somatic cell transplant from a donor who was naturally immune to the virus that causes AIDS.

Stem Cell Therapy:

- Stem-cell therapy is that the use of stem cells to treat or prevent a disease or condition.
- Stem cell medical aid, also referred to as regenerative medicine, promotes the repair response of diseased, dysfunctional or injured tissue using stem cells or their derivatives.
- **Stem cells will then be implanted into an individual. Stem Cells:** Stem cells are a unit the cells from that all alternative cells with specialised functions are generated.
- Under sure conditions within the body or a laboratory, stem cells divide to create more cells known as daughter cells.

- These daughter cells either become new stem cells (self-renewal) or become specialised cells (differentiation) with a additional specific operate, like blood cells, brain cells, muscle cells or bone cells.
- No other cell within the body has the natural ability to get new cell sorts.
- HIV: HIV may be a polymer virus. HIV attacks CD4, a sort of White blood cell (T cells) within the body's immune system.
- T cells are those cells that move round the body detecting anomalies and infections in cells.
- HIV is transmitted from person to person through bodily fluids together with blood, semen, vaginal secretions, anal fluids and breast milk.

27. INTEGRATED JUDICIARY

Importance for Prelims: Polity

Need to strengthen the federal nature of our judiciary by empowering High Courts.

- **Integrated Judiciary:** Indian Constitution has established an independent and integrated judiciary to protect the ascendancy of the Constitution.
- B.R. Ambedkar stated within the Constituent Assembly: “The Indian Federation though a dual polity has no dual judiciary at all.
- The High Courts and the Supreme Court type one single integrated judiciary having jurisdiction and providing remedies altogether cases arising under the constitutional law, the civil law or the criminal law.”
- Integrated judiciary refers to the integrated structure of Indian judiciary with the Supreme Court at the highest and also the state high courts below it.
- The Indian Constitution envisaged the equality of power of court judges and Supreme Court judges, with a high court decide not being a subordinate of a Supreme Court decide.
- This ensures one system of courts enforcing each the Central as well because the state laws.
- In USA, we've a double system of courts whereby federal courts enforce federal laws and state judiciary enforces state laws.
- Constitution ensures integrated judiciary by putting SC at the top, whereas High Courts, subordinate courts and district courts work below it.
- It could be a unitary feature of the Constitution.

Topic 28. ORGANIZATION FOR ISLAMIC COOPERATION (OIC)

Importance for Prelims:IR



India lashed out at the Organisation of the Islamic Cooperation (OIC) for being “communal minded” when the grouping referred to as on the UN Human Rights Council to require “necessary measures” on the issue of Muslim girl students being told to not wear the hijab in Karnataka faculties. What is the OIC?

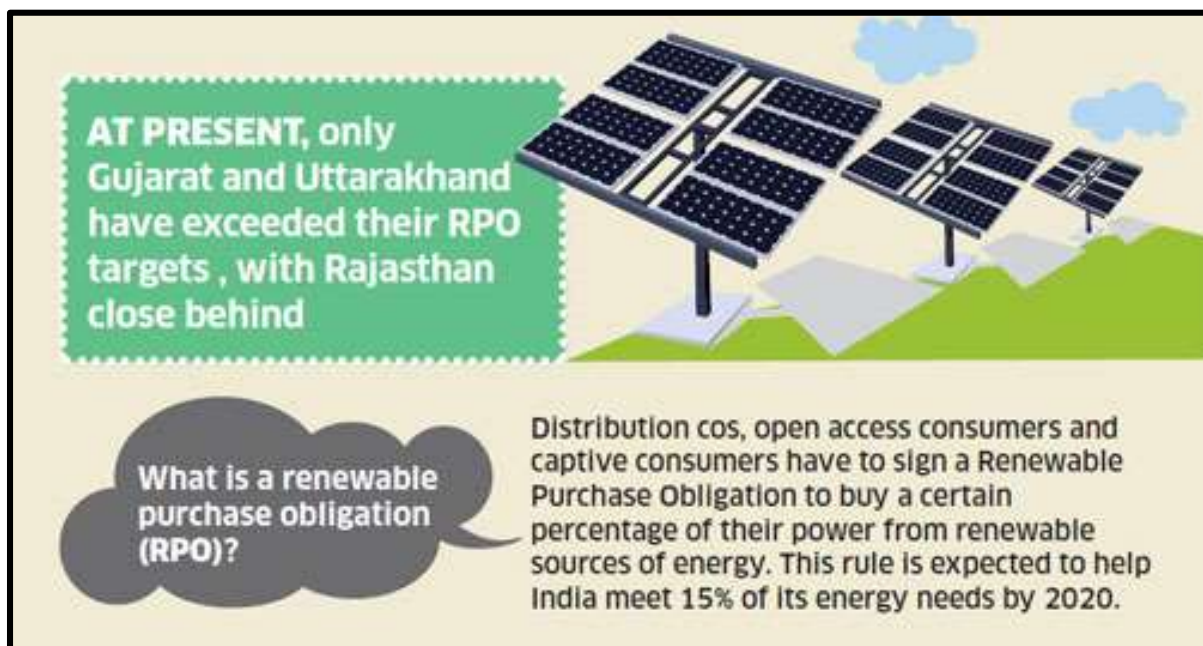
- The Organisation of the Islamic Cooperation is that the world’s second largest multilateral body when the UN.
- It has 57 members, all of that are Islamic countries or Muslim majority members.
- **Headquarters:** Jeddah, Saudi Arabia.
- The OIC’s expressed objective is “to safeguard and shield the interests of the Muslim world within the spirit of promoting international peace

and harmony among various individuals of the world”.

- The Organisation of the Islamic Conference was established by the primary Islamic Summit Conference held in Morocco in September 1969.
- It was referred to as the Organisation of Islamic Conference till 2011.
- India & OIC India comprises of the world's second largest Muslim community.
- India isn't a member of the OIC.

Topic 29. RENEWABLE PURCHASE OBLIGATIONS (RPOs)

Importance for Prelims: Environment



Row between Centre and Telangana govt over renewable energy procurement. Telangana has been significantly vocal regarding the “increasing burden” forced upon states by the Centre on account of the clean energy cess imposed on coal and therefore the RPOs (Renewable Purchase Obligation).

- Renewable Purchase Obligation: under RPO, power distribution companies purchase an exact percentage of their needs from renewable energy sources. Renewable purchase obligations set targets for states for each solar and nonsolar energy procural as a part of their RPO.
- Under Renewable Purchase Obligation (RPO) bulk purchasers like discoms, open access shoppers and electrical phenomenon users are needed to buy an exact proportion of RECs(Renewable Energy Certificates).
- They can buy RECs from renewable energy producers. Renewable Energy Certificates (RECs) may be a market-based instrument to promote renewable sources of energy and development of the market in electricity.
- One REC is made once one megawatt hour of electricity is generated

from an eligible renewable energy supply.

- RPO was instituted in 2011, it's a mandate that needs large power procurers to shop for a preset fraction of their electricity from renewable sources.
- The proportion of renewable energy for utilities is mounted by the central and state electricity regulatory commissions. In India, RECs are listed on 2 power exchanges — Indian Energy Exchange (IEX) and Power Exchange of India (PXIL).
- The price of RECs is decided by market demand, and contained between the 'floor price' (minimum price) and 'forbearance price' (maximum price) specified by the Central Electricity regulatory Commission (CERC).

Topic 30. REPO & REVERSE REPO RATES

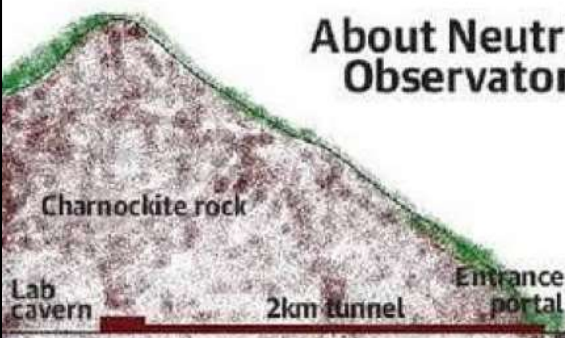
Importance for Prelims:Economy

Banks interest rates are supported repo & reverse repo rates.

- **Repo Rate:** The interest rate that the rbi charges once industrial banks borrow money from it's referred to as the repo rate.
- **Reverse Repo:** The interest rate that the run pays industrial banks once they park their excess cash with the central bank is termed the reverse repo rate.
- Since run is also a bank and needs to earn over it pays, the repo rate is higher than the reverse repo rate.
- At present, the repo rate is 4-dimensional, and also the reverse repo rate is 3.35%.
- It may be a key deciding issue for the interest rates that industrial banks themselves pay (or get) once they borrow (or deposit) money from (or in) the reserve bank of India.

Topic 31. INDIAN NEUTRINO OBSERVATORY

Importance for Prelims: Science & Tech



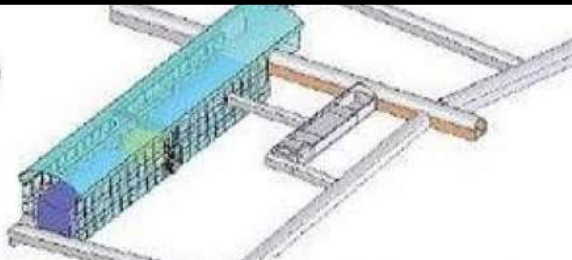
About Neutrino Observatory

Charnockite rock

Lab cavern

2km tunnel

Entrance portal



A SCHEMATIC VIEW OF THE PROPOSED INDIA-BASED NEUTRINO OBSERVATORY UNDERGROUND LAB

Where	Why	Neutrino	Highlights
At Pottipuram village in Theni district, on the Tamil Nadu-Kerala border	The initial goal of India-based Neutrino Observatory (INO) is to study neutrinos	Neutrinos are the smallest particles that form the universe	Two underground laboratory caverns with a rock cover of over 1000 metres; access tunnel of 2 km length

Where else
<div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> Underground SNO, Canada; Kamioka, Japan; Gran Sasso, Italy </div> <div style="width: 45%;"> Underwater Amundsen - Scott South Pole Station, Antarctica; Antares - under Mediterranean sea off the coast of Toulon, France </div> </div>

The Tamil Nadu government filed an affidavit within the apex court stating the INO project at Bodi West Hills in Theni would cause irreparable damage to the Western Ghats

- The project, if implemented, can have an effect on the flora and fauna of the Periyar Tiger Reserve and Mathikettan Shola national park within the Western Ghats — that have earned world name for effective conservation — the affidavit claimed.

What is a neutrino?

- Neutrinos are the littlest particles that kind the universe.
- Neutrinos that are elementary particles have no charge and virtually no mass and so don't have an effect on anything they have.
- They are naturally made within the atmosphere of the world and are gift around us the least bit times, inflicting no injury.
- **About Indian Neutrino Observatory:** INO Project could be a multi-

institutional effort aimed at building a best underground laboratory with a rock cover of approx.

- 1200 m for non-accelerator primarily based high energy and nuclear physics analysis in India.
- The projected web site is unfold across Kerala and atomic energy. It is funded by Dept. of atomic energy (DAE) and therefore the Dept. of Science and Technology (DST).
- **Objectives:** INO can observe neutrinos and antineutrinos made within the atmosphere of the world.
- This observation can tell U.S. a lot of concerning the properties of neutrino particles, whose main supply is that the Sun and therefore the Earth's atmosphere.
- The project includes: Underground laboratory and associated surface facilities at Bodi West Hills. Construction of a magnetized Iron calorimeter (ICAL) detector for finding out neutrinos.
- When completed, ICAL can have the world's largest magnet. fixing inter Institutional Centre for top Energy Physics (IICHEP) at Madurai

What's special about locating the INO within the South?

- A project report says most of the lepton detectors are at latitudes over 35 deg.
- It is feasible to push such a detector right down to virtually eight deg latitude in South India, among proximity to the Equator.
- This permits neutrino astronomy searches covering the total celestial sky and study of solar neutrinos passing through the Earth's core.
- **Periyar Tiger Reserve:** It falls within the districts of Idukki and Pathanamthitta in Kerala (southern region of Western Ghats).
- Declared a Sanctuary throughout 1950 and Tiger Reserve in 1978.
- It gets its name from the watercourse Periyar that has its origin deep

within the reserve.

- Mathikettan Shola national park: Mathikettan Shola National Park could be a national park in Poopara village in Idukki district of Kerala.
- Considering the distinctive nature of the shola forest in Mathikettan and its importance as an elephant strip, the authorities has declared it as a national park in 2008.

Topic 32. MINSK II CEASEFIRE AGREEMENT

Importance for Prelims:IR

At a gathering at the United Nations Security Council (UNSC) referred to as by Russia to debate the Ukraine crisis, on the seventh anniversary of the capital II ceasefire agreement, India called for a diplomatic resolution to the tensions.

- Minsk II Ceasefire Agreement: Ukraine and also the Russian-backed separatists in agreement a 12-point ceasefire deal within the capital of Belarus in September 2014.
- The agreement quickly poor down, with violations by each side.
- MINSK II: Representatives of Russia, Ukraine, the Organisation for Security and Cooperation in Europe (OSCE) and also the leaders of 2 pro-Russian separatist regions signed a 13-point agreement in February 2015 in Minsk.

The 13 points were, in brief:

1. an immediate and comprehensive ceasefire
2. Withdrawal of all heavy weapons by each side
3. observance and verification by the OSCE
4. to start a dialogue on interim self-determination for the city and Luhansk regions, in accordance with Ukrainian law, and acknowledge their special standing by a resolution of parliament.
5. A pardon and amnesty for people involved within the fighting
6. an exchange of hostages and prisoners.
7. Provision of humanitarian assistance.
8. resumption of socio-economic ties, as well as pensions.
9. Restore full control of the state border by the government of Ukraine.
10. Withdrawal of all foreign armed formations, military instrumentation and mercenaries.
11. Constitutional reform in Ukraine as well as spread, with specific

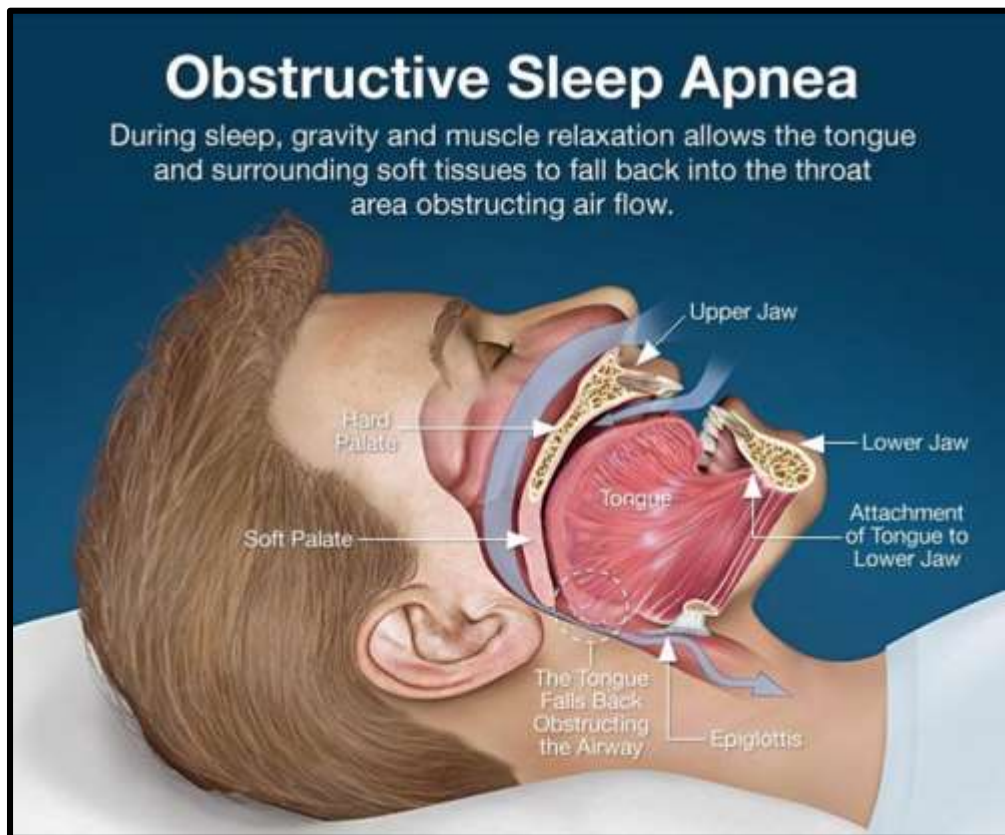
mention of donetsk and Luhansk.

12. Elections in donetsk and Luhansk on terms to be in agreement with their representatives.

13. Intensify the work of a Trilateral Contact group as well as representatives of Russia, Ukraine and the OSCE.

Topic 33. OBSTRUCTIVE SLEEP APNEA

Importance for Prelims: Science & Tech



Obstructive sleep apnea, the medical condition that has been within the spotlight since Bappi Lahiri's death.

What is obstructive sleep apnea or OSA?

- OSA may be a disorder within which a person's respiratory stops and starts repeatedly in their sleep.
- Obstructive sleep apnea happens once muscles within the throat and upper airway relax intermittently throughout sleep and block the airway.
- It usually happens in obese men, less ordinarily in girls however it will happen.
- When an individual is obese, they develop additional fat on their larynx and pharynx (muscles within the throat) which will shut off their airway in sleep.
- When no air enters the lungs, the oxygen saturation starts falling.

- When it's critical, the brain wakes the person up.
- They come to life subconsciously, the respiratory restarts.
- And this cycle keeps repeating through the night.
- Although the condition doesn't kill by itself, it will cause heart attacks and strokes thanks to the low oxygen level.
- In the long-term, it may result in increasing vital sign, abnormal heart rhythms, and alternative metabolic disorders.
- It more ends up in a rise in obesity, compounding the matter.
- OSA also ends up in a lot of road traffic accidents as people with OSA tend to doze off while driving.
- It may also cause depression.

Topic 34. FALKLAND ISLANDS

Importance for Prelims: Geography



UK has objected to China backing Argentina's claim to the Falkland Islands.

What is this dispute about?

- Since the 18th century, the Falkland Islands, situated off the coast of Argentina within the South Atlantic Ocean, have forever been subjected to colonisation and conquests by Britain, France, Spain and Argentina.
- Prior to the 1700s, the islands were depopulated, with France first establishing a colony there in 1764.
- The next year, once the British arrived to take the islands for themselves, it marked the start of a dispute that has been current ever since.

What happened to the islands post WWII?

- The dispute continued within the post WWII world scenario.
- Argentina's assertion of sovereignty over the island throughout the

presidency of Juan peron briefly sour relations with the uk.

- In December, 1965, the international organisation General Assembly adopted Resolution 2065, a non-binding resolution that recognized the existence of a sovereignty dispute between the united kingdom and Argentina over these islands, that urged each countries to seek out a peaceful answer to the dispute.

How did the Falklands War break out?

- Argentina has maintained that the Falklands were lawlessly taken from it in 1833 and invaded the British colony in 1982.
- That incident resulted in what later came to be called the Falklands War that lasted a touch over 3 months, ending in conclusion for the uk.

About Falkland Islands:

- The falkland islands are an ground within the south atlantic Ocean on the Patagonian Shelf.
- The principal islands area unit to the east of South America's southern Patagonian coast and to the north of the antarctic peninsula.
- The island are bio geographically a part of the antarctic zone.

Topic 35. ALUMINIUM- THE GREEN METAL

Importance for Prelims: Science & Tech

According to a world bank report on inexperienced energy revolution, aluminum is that the solely metal that's each high-impact and cross-cutting, in all potential clean power technologies.

Aluminium is employed in most clean energy technologies, particularly in solar wherever it accounts for 85 per cent of most PV parts within the sort of the frames and mounting structures that hold the PV panels along and support them.

WHY aluminum is termed THE green METAL?

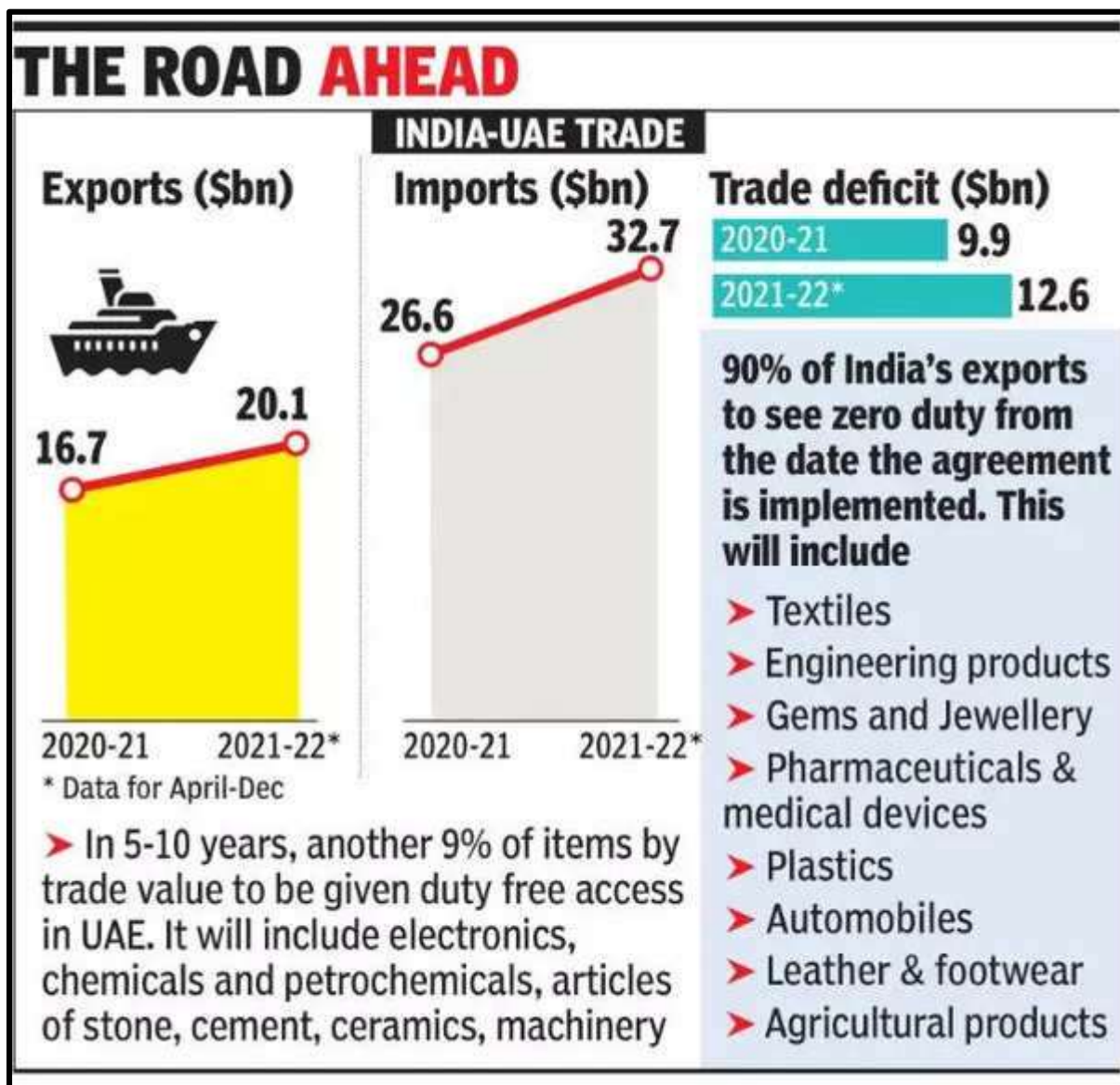
Aluminium is termed the green metal as a result of it's a very environmentally friendly metal.

- Recycling this material saves 95th of the energy needed to provide aluminum from raw materials.
- **LOW WEIGHT:** it's one third of the density of steel, that is why aluminium is additionally referred to as a light metal. it's an occasional density as a result of a lower atomic weight compared to wither metals.
- **DURABLE STRENGTH:** Aluminum will become one among the toughest metals on earth. aluminum alloys are employed in several applications where strength and sturdiness area unit required.
- **HIGHLY MALLEABLE:** thanks to aluminum's extremely malleable (second in the world once gold) properties it may be rolled or hammered into very skinny sheets while not breaking.
- **RESISTANCE FROM CORROSION:** this can be primarily as a result of aluminium spontaneously forms a thin however effective compound layer that prevents more oxidation.
- **CONDUCTIVE:** Pure aluminum has high thermal conductivity. aluminum alloys will have much a lower conductivity, however seldom as low as iron or steel.

- **NON FLAMMABLE:** so once aluminum is exposed to a chronic hearth setting it'll begin to melt (not burn), as long as the metal's temperature passes the melting point.
 - **RECYCLABLE:** aluminum may be recycled forever: It may be molten down and reformed while not losing any quality, and therefore the method may be recurrent over and another time.
 - **LONG LIFE:** aluminum is durable thanks to its long time period.
- AFFORDABILITY:** aluminum is fast to chill down compared to ancient materials, that is of serious advantage in solar PV, as increase in temperature of PV cells reduces the potency of electricity generation. cost-effective and needs significantly less energy.

Topic 36. INDIA-UAE TRADE PACT

Importance for Prelims:IR



THE Comprehensive Economic Partnership Agreement (CEPA) with the United Arab Emirates (UAE), likely to be signed on Friday.

India-UAE trade relations:

- The United Arab Emirates is India's third largest trading partner once China and USA, and second largest export destination once USA as per Economic Survey 2021.
- Bilateral trade between India and the UAE stood at \$43.3 billion in 2020-21.

- India's major exports to the UAE embrace petroleum merchandise, precious metals, stones, gems and jewelry, minerals, food things like cereals, sugar, fruits and vegetables, tea, meat, and seafood, textiles, engineering and machinery merchandise, and chemicals.
- India's high imports from the UAE embrace petroleum and petroleum products, precious metals, stones, gems and jewellery, minerals, chemicals and wood and wood products.
- India foreign \$10.9 billion of crude from the UAE in 2019-2020.

Topic 37. REFUGEE CONVENTION

Importance for Prelims: Polity

Model laws on asylum and refugees that were written by the National Human Rights Commission (NHRC) decades ago however not implemented by the government need to be revised.- says NHRC member.

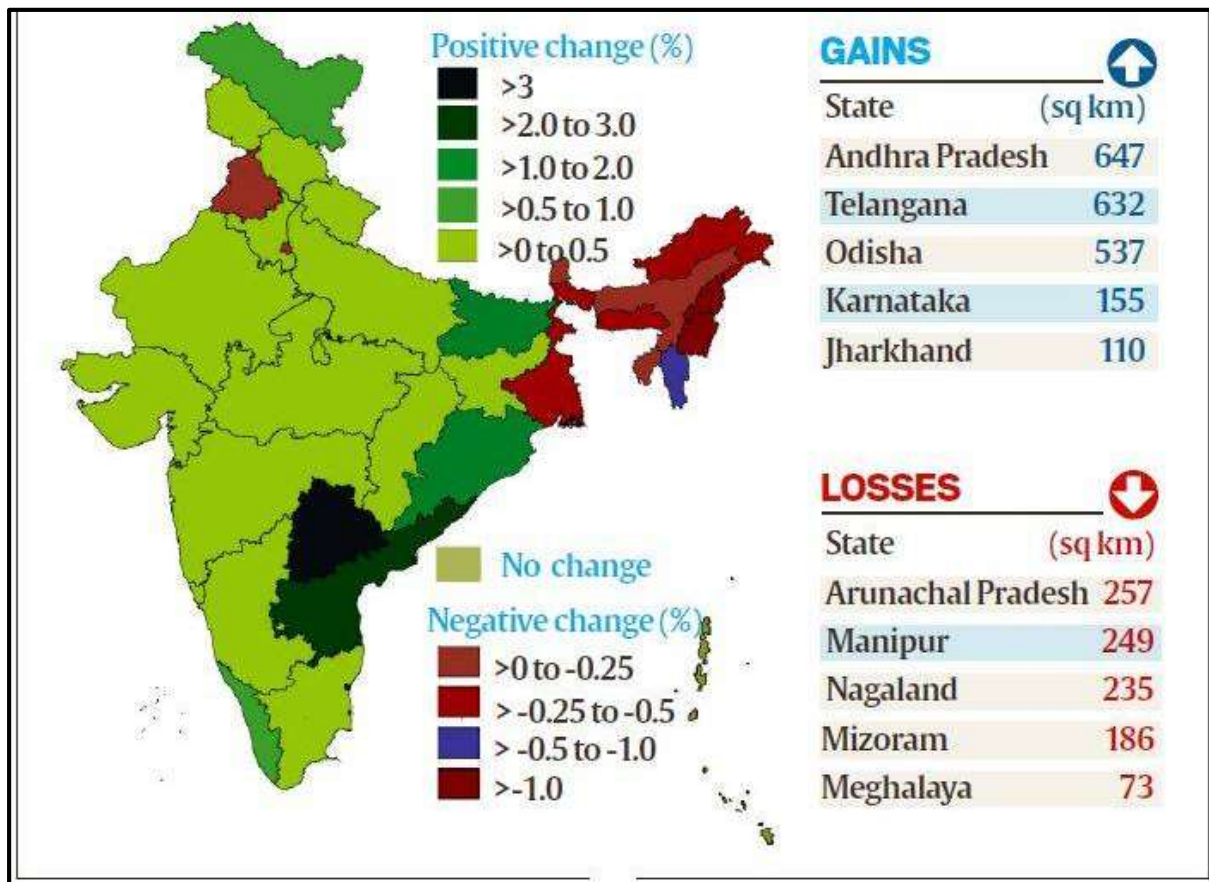
- India & UN convention: India has welcome refugees within the past, and on date, nearly 300,000 folks here are classified as refugees. however India isn't a somebody to the 1951 UN Convention on the standing of Refugees and also the subsequent 1967 Protocol.
- Nor will India have a refugee policy or a exile law of its own.
- The highest India has return to a refugee policy in recent years is that the Citizenship change Act, 2019, that discriminates between refugees on the idea of religion in giving them Indian citizenship.
- Under the Citizenship Act an “illegal migrant” is outlined as a foreigner who has entered into India— (i) while not a sound passport or alternative travel documents and such other document or authority as is also prescribed by or under any law in this behalf; or (ii) with a sound passport or alternative travel documents and such alternative document or authority as is also prescribed by or under any law in this behalf however remains in this beyond the allowable amount of your time.
- An illegal migrant is excluded from the acquisition of citizenship through birth, registration, or naturalization.
- There isn't any program to grant citizenship to extralegal migrants or their children.
- UN Convention on the standing of Refugees: below the 1951 UN Convention on the standing of Refugees and also the subsequent 1967 Protocol, the word exile pertains to any person who is outside their country of origin and unable or unwilling to come thanks to tenable worry

of ill-treatment for reasons of race, religion, nationality, membership of a specific group or political opinion.

- Stateless persons can also be refugees during this sense, wherever country of origin (citizenship) is known as 'country of former habitual residence'.

Topic 38. INDIA STATE OF FOREST REPORT 2021

Importance for Prelims: Environment



The National Remote Sensing Agency, Hyderabad, ready a report on India's forest cover victimization satellite imagery that crystal rectifier to India State of forest Report Since 1987

- Some four decades ago, within the mid-1980s, the National Remote Sensing Agency, Hyderabad, ready a report on India's forest cover using satellite imagery.
- The report compared the forest cowl between 1972-75 and 1980-82, and located that the country had lost one.3 million hectares (ha) of forests every year during this sevenyear amount. Soon, the Forest Survey of India (FSI), Dehradun, was tasked with producing an assessment of the country's forest wealth each 2 years.
- Since 1988, once FSI created the primary State of Forest Report 1987,

the aptitude of satellites and of interpretation of forests has improved substantially, however a similar isn't the case with the state of the country's forest cover.

- **India State of Forest Report 2021 (ISFR 2021):** India State of Forest Report 2021 (ISFR 2021), free January 13, 2022, shows a least increase of 0.16 million hour angle (0.2 per cent) within the forest cover between 2019 and 2021.
- ISFR 2021 shows that close to 28 per cent of the forest cover is outside the recorded forest area.
- About 12 per cent of the terribly dense class of forests is additionally outside the recorded areas.
- The report also shows that the rise in forest cowl between 2019 and 2021 went on primarily attributable to the expansion outside the recorded area.
- In 2021, India's total forest cowl other up to 71.38 million hour angle, that is twenty two per cent of the country's geographical region.
- What to notice is that this forest wealth — concerning 60 per cent of total forest cowl and 73 per cent of the very dense forests — is targeted in districts classified as “tribal” by ISFR 2021.
- These districts are listed underneath Schedule V of the Constitution as habitats of scheduled Tribes.

Topic 39. INDIA-USA FTA

Importance for Prelims:IR

FTA to come into effect by early May, Indian goods to get duty-free access to UAE in 5 years.

India UAE Free Trade Agreement (FTA):

The FTA will cover the following areas:

1. Trade in goods and services
2. Rules of Origin
3. Customs procedures
4. Government procurement
5. Intellectual Property Rights
6. E-Commerce Important features of India- UAE FTA:
 - Presently India-UAE trade [export (\$26 B) + import (\$34B)] is around \$60 billion that is predicted to touch \$100 billion within the next 5 years.
 - Both the countries have removed tariffs on 80th of products.
 - The FTA can provide zero duty access to 90th of India's exports to UAE.
 - The FTA includes robust rules of origin to guard each economies from misuse of the agreement by third countries, as well as a demand of "melt and pour" for steel exports to qualify as domestically created products from either country.
 - The "melt and pour" rule of origin defines "the original location wherever the raw steel is: (A) 1st created in a steel-making chamber in an exceedingly liquid state; and then (B) Poured into its 1st solid form.)
 - The FTA conjointly provides a permanent safeguard mechanism to protect businesses in each countries to forestall any unnecessary or unwarranted surge in volumes of (imports) any specific product.

- INDIA- UAE Trade Relations: The United Arab Emirates is India's third largest trading partner once China and USA, and second largest export destination once USA as per Economic Survey 2021.
- India's major exports to the UAE embody petroleum products, precious metals, stones, gems and jewellery, minerals, food things like cereals, sugar, fruits and vegetables, tea, meat, and food, textiles, engineering and machinery products, and chemicals.
- India's prime imports from the UAE embody petroleum and petroleum products, precious metals, stones, gems and jewellery, minerals, chemicals and wood and wood products.

Topic 40. ASIA's BIGGEST BIO-CNG PLANT IN MP

Importance for Prelims:Environment

Prime Minister Narendra Modi on Saturday inaugurated Asia's biggest Bio-CNG plant in Madhya Pradesh's Indore via video conferencing.

Bio-CNG Plant in Indore:

- A typical bio-CNG station comprises a biogas purification unit, a compressor, and a high-pressure storage system.
- The Bio-CNG plant in Indore has been set up based on the concept of waste-to-wealth innovation in India's cleanest city.
- The plant with 550 MT per day capacity is said to be the biggest of its kind in Asia.
- It will produce CNG with 96 percent pure methane for the fifth time in a row, Madhya Pradesh's Indore has been ranked India's cleanest city under the Centre's annual cleanliness survey SwachhSurvekshan 2021.
- The Bio-CNG plant will be operated using 100 percent wet waste. It is estimated to produce 18,000 kg gas per day which will help in running around 400 buses in the city daily.
- This plant has some unique features, like: Fully automated pre-treatment unit and separation hammer mill technology.
- This will prepare bio-slurry feed to run digesters. Anaerobic digesters, that have been mounted with agitators.
- They work on Continuous Stirred Tank Reactor (CSTR) principle. Use of 'Pressure Swing Adsorption (VPSA) technology', to ensure high quality recovery of bio-CNG fuel from raw biogas.
- **Bio-CNG:** Bio-CNG is a purified form of biogas with over 95% pure methane gas. It is similar to natural gas in its composition (97% methane) and energy potential.
- While natural gas is a fossil fuel, bio-CNG is a renewable form of energy.

produced from agricultural and food waste.

- Bio-CNG is being looked at as an environment-friendly alternative to diesel.

Topic 41. MH-60 R HELICOPTERS

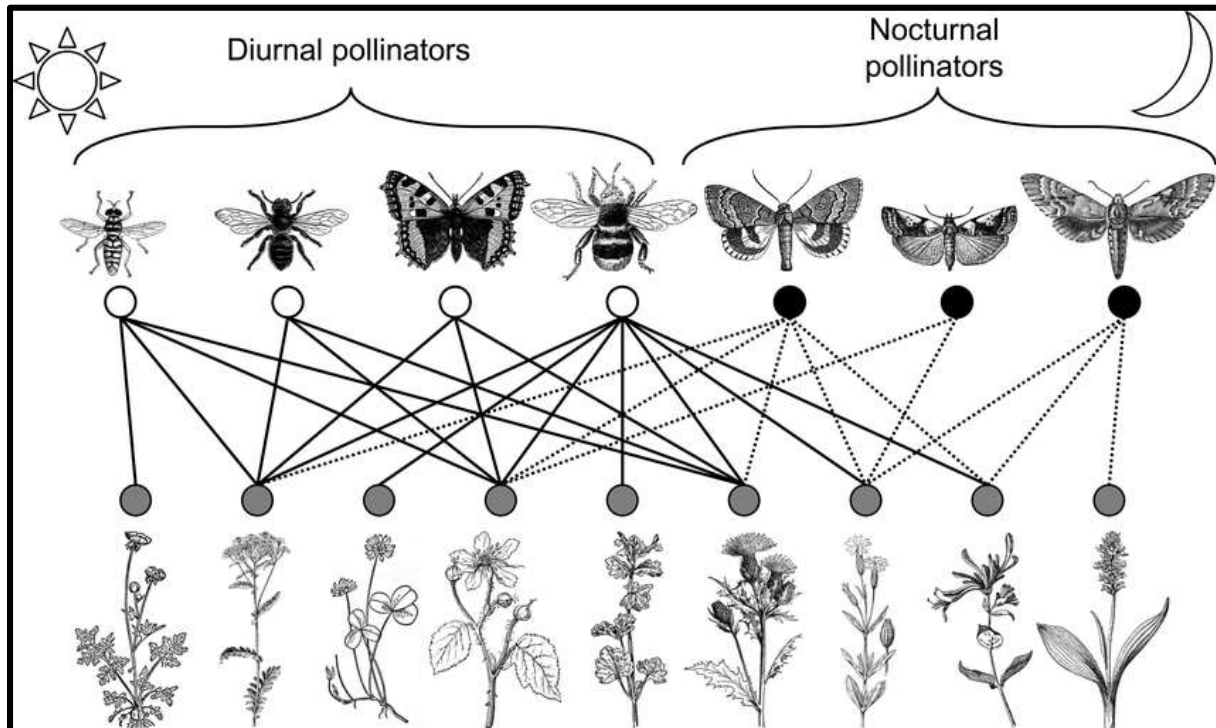
Importance for Prelims: Science & Tech

The first batch of 3 MH-60R Multi-Role Helicopters contracted by the Navy from the us are scheduled to arrive in India by mid-July, in step with defence officers.

- India had signed a \$2.2 bn deal for MH-60R helicopters engineered by Lockheed Martin throughout the visit of then U.S. President Donald Trump in February 2020. Deliveries are expected to be completed by 2025.
- **About MR-60 R Helicopters:** The MH-60Rs are a replacement of the sea King 42/42A helicopters already decommissioned within the 1990s.
- These helicopters are thought-about to be the world's most advanced maritime helicopter.
- It can offer India the capability to perform anti-surface and anti-submarine warfare missions.
- It also will enhance the Navy's ability to perform secondary missions, together with search and rescue, and communications relay.

Topic 42. NIGHT POLLINATORS

Importance for Prelims: Science & Tech



Moths important to pollination within the Himalayan ecosystem, finds study.

- Moths are widely considered as pests, however a recent study by scientists of Zoological Survey of India (ZSI) has disclosed that these group of insects are pollinators to variety of flowering plants within the Himalayan ecosystem under the project titled “Assessment of Moths (Lepidoptera) As important Pollinators within the Himalayan ecosystem of North eastern India” The study establishes 91 species of moths as potential pollinators of 21 plant families in Sikkim and Arunachal Pradesh within the Northeastern Himalayas .
- The study disclosed the importance of moths in nature.
- When we have a tendency to are sleeping in our bedrooms, they're indefatigably operating for the ecosystems to figure, on that our survival is invariably dependent, and are serving to in a very great way towards food security.

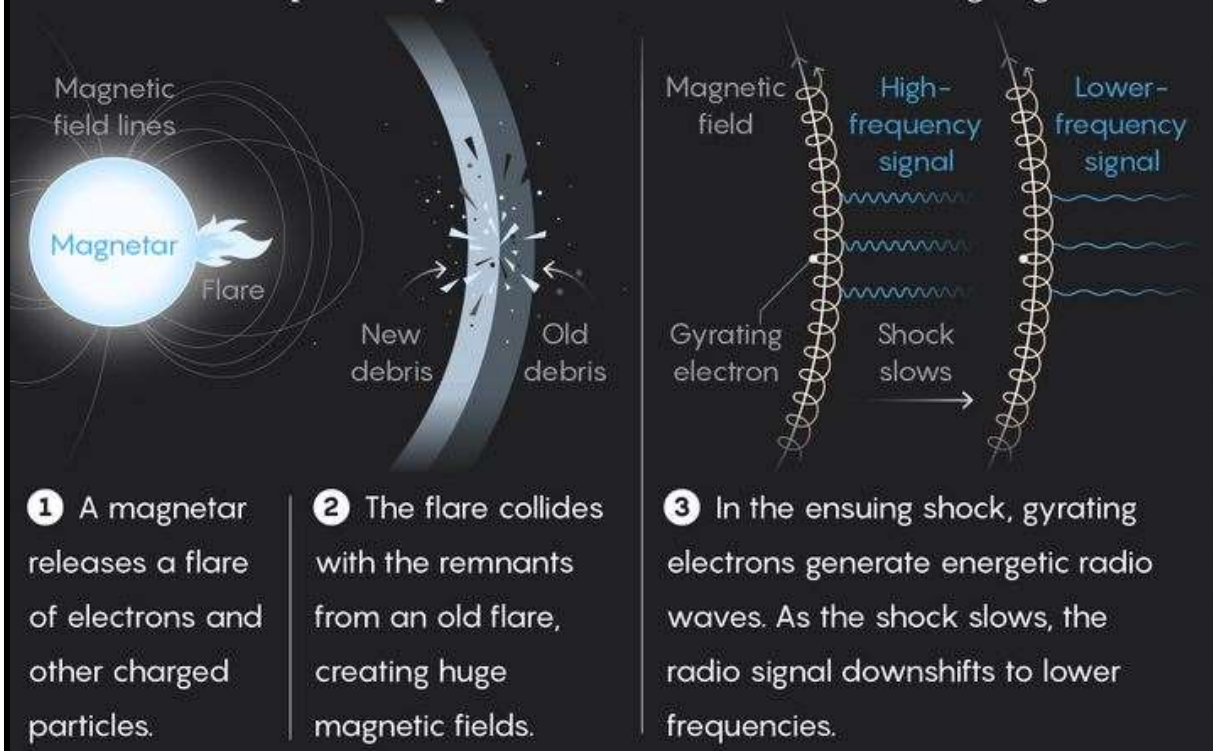
- **About Moths:** Lepidoptera is that the order of insects that features butterflies, moths and skippers.
- The name Lepidoptera comes from the Greek, that means “scaly winged,” and refers to the characteristic covering of microscopic dirt like scales on the wings.
- Due to their day-flying habits and bright colours, the butterflies are additional familiar than the in the main night-flying and dull-coloured moths, however the latter is much additional varied and abundant.
- The skippers are a worldwide group intermediate between butterflies and moths.
- There are regarding 12,000 moth species in Bharat and regarding 160,000 lepidopterous insect species within the world.
- About 90th of the world’s flowering plants ar pollinated by animals. Therefore, pollinators are essential for the genetic exchange among flowering plants and therefore the biodiversity among plants Researchers have got wind that nearly simple fraction of common massive moth species have declined over the last 40 years in some components of world.
- One of main reasons for the decline is light pollution (an increase in artificial light in moth habitats).

Topic 43. FAST RADIO BURSTS (FRBs)

Importance for Prelims: Science & Tech

How Fast Radio Bursts Work

Fast radio bursts are brief, energetic blips of radio waves that originate far across the universe. At least one repeats, which has added to the challenge of explaining what might be creating them. A new model accounts for past observations and predicts specific features that should be seen going forward.



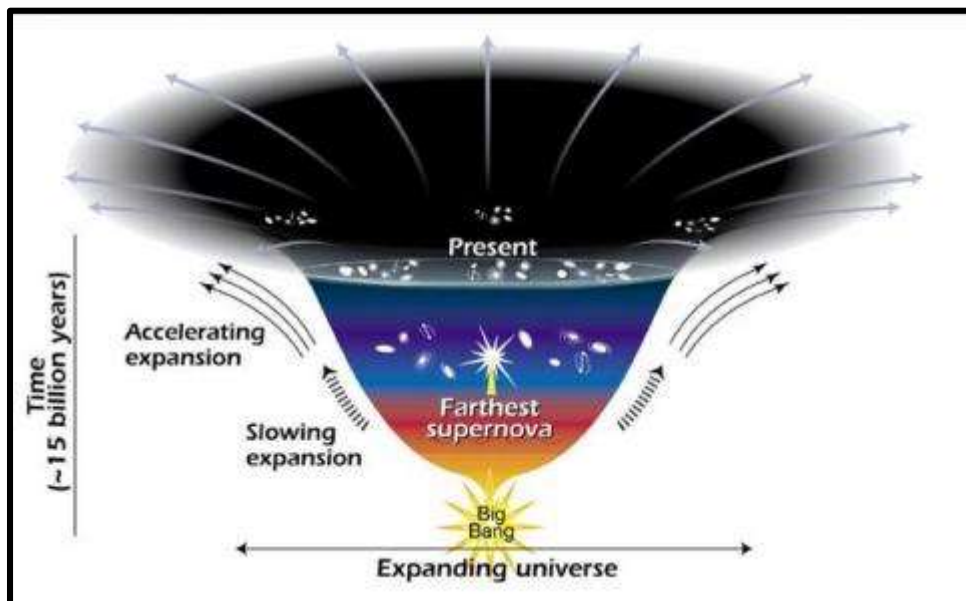
Astronomers of National Centre of Radio astrophysics (NCRA-TIFR) in Pune and therefore the University of CA within the U.S. have used the giant Metrewave radio telescope (GMRT) to map the distribution of atomic hydrogen gas from the host galaxy of a quick radio burst (FRB) for the primary time.

- **Fast radio bursts:** Fast radio bursts are extremely bright radio waves from distant galaxies that last for less than a few milliseconds owing to that it's difficult to find them and verify their position within the sky.
- FRB produces continual, very short bursts, and these are found to arise within the outskirts of a spiral galaxy half a billion light-years away. •

- It was initially discovered in 2007.
- In 2020, the National physics and space Administration (NASA) noticed FRB for the primary time within the milky way.
- A defining property of those bursts is their dispersion (scattering or separation), the bursts produce a spectrum of radio waves, and because the waves travel through matter, they detached or disperse with bursts at higher radio frequencies inward at telescopes sooner than those at lower frequencies.
- This dispersion permits researchers to be told about 2 necessary things:
 1. they'll live this dispersion to be told about the things that radio bursts pass through as they travel toward Earth.
 2. they'll indirectly verify however way apart things are. It is accustomed perceive the three-dimensional structure of matter within the universe and to be told concerning poorly understood early moments within the evolution of the universe.
- **About GMRT:** The GMRT located near Pune is an array of thirty totally dirigible parabolic radio telescopes of 45-metre diameter, observing at metre wavelengths.
- It is operated by the National Centre for Radio astrophysics (NCRA), a district of the Tata Institute of basic research, Mumbai.
- Astronomers from everywhere the world frequently use this telescope to watch many alternative astronomical objects like ionized interstellar atomic hydrogen Regions, galaxies, pulsars, supernovae, and Sun and solar winds.

Topic 44. DARK MATTER

Importance for Prelims: Science & Tech



Astronomical observations suggest that a significant a part of the universe is created of matter that interacts with the rest of the universe solely through the gravitational pull.

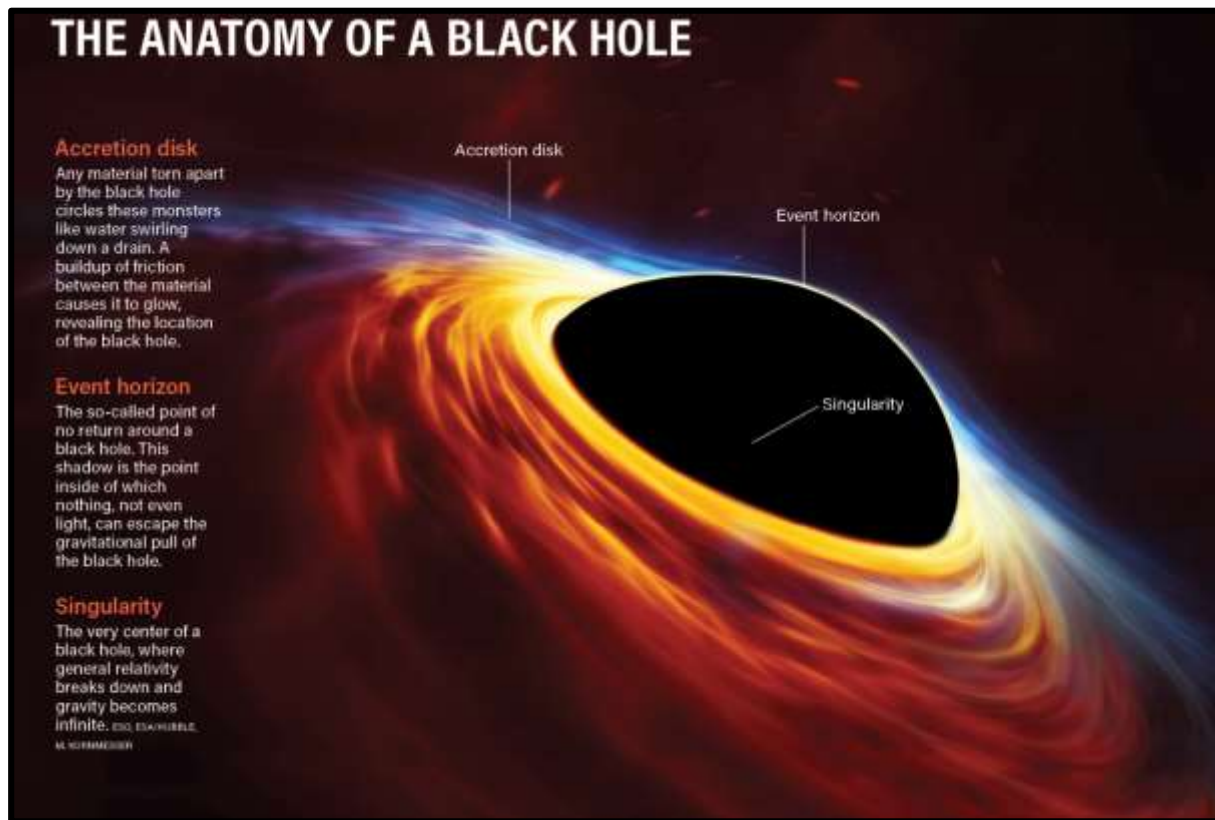
- Primordial black holes: One hypothesis is that matter contains an oversized number of compact objects like primordial black holes.
- When the universe was terribly young, hot and dense – before long once the big Bang, it should have had quantum fluctuations of its density.
- This, in turn, would have caused some regions to become very dense, and so, to collapse below their own gravity to create the primordial black holes. Gravitational lensing : once light travels through space and passes close to a massive or compact body – a star, a galaxy or a part, as an example, the intense gravity of that body may attract the light towards it, bending it from its rectilinear (straight line) path.
- This development is understood as attractive force lensing and was 1st ascertained by Arthur eddington in 1919.
- Massive objects like galaxies will bend light-weight considerably,

producing multiple images, this can be referred to as robust lensing.

- Lighter objects like stars or black holes bend light-weight less, and this can be referred to as microlensing.
- A similar lensing will happen to gravitational waves motion towards the earth, and this might leave signatures within the detected gravitational waves.
- This may be wont to sight the presence, or the existence, of primordial black holes.

Topic 45. BLACK HOLES

Importance for Prelims: Science & Tech



The supermassive part at the centre of the milky way, that contains a mass 4 million times greater than the Sun, is discovered.

- Observations showing a roughly dough-nut-shaped cloud of cloud and gas shrouding a supermassive part at the centre of galaxy Messier 77 similar in size to our milky way.
- **About Black Holes:** Black holes are terribly dense objects possessing gravitational pulls therefore powerful even light cannot escape them.
- It refers to some extent in house wherever the matter is therefore compressed on produce a gravity field from that even lightweight cannot escape.
- The construct was theorized by albert einstein in 1915 and therefore the term 'black hole' was coined within the mid-1960s by american scientist John Archibald Wheeler.

- **The black holes belong to 2 categories:** One category ranges between a number of solar masses and tens of solar masses.
- These are thought to create once large stars die.
- The other category is of supermassive black holes.
- These vary from many thousands to billions of times that of the sun from the system to that Earth belongs.
- **Messier 77:** Messier 77, additionally referred to as NGC 1068 or the Squid Galaxy, is found 47 million light years – the space light travels in an exceedingly year, 9.5 trillion km – from the planet within the constellation cetus.
- Its supermassive part contains a mass roughly 10 million times greater than our sun.