WEEKLY CURRENT AFFAIRS MAGAZINE for

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

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8 September to 15 September

PIONEER ACADEMY's

PATHFINDER

CURRENT AFFAIRS FOR CIVIL SERVICES

Topic 1. MINIMUM SUPPORT PRICE (MSP)

Importance for Prelims: Agriculture

RSS wing seeks guaranteed crop prices.

- MSP is the minimum price paid to the farmer for procuring food crops.
- It offers an assurance to farmers that their realization for the agricultural produce will not fall below the stated price.
- The government uses the MSP as a market intervention tool to incentivize production of a specific food crop which is in short supply.
- It likewise shields ranchers from any sharp fall in the market cost of a ware.

- MSPs are usually announced at the beginning of the sowing season and this enables farmers to make informed choices at the crops they have to
- MSP is computed on the idea of the suggestions made thru the Commission for Agricultural Costs and Prices (CACP).
- It considers elements such as the price of manufacturing, alternate in input expenses, market rate traits, demand and supply, and a reasonable margin for farmers.
- The Centre has extended the MSP of Kharif plants for 2020-21 crop yr in keeping with the precept of fixing MSPs at a degree that's at 1.5 times the price of manufacturing that was introduced in Union Budget 2018-19.
- Concerted efforts were made over the last few years to realign the MSPs in favor of oilseeds, pulses and coarse cereals to encourage farmers shift to larger Areas beneath those plants and undertake the excellent technologies and farm practices, to accurate the demand-supply imbalance.
- The brought cognizance on nutri-wealthy nutri-cereals is to incentivize its production inside the regions where rice-wheat cannot be grown with out long term unfavourable implications for groundwater desk.
- Crops covered under MSP: Paddy, Jowar, Bajra, Ragi, Maize, Tur, Moong, Urad, groundnut, sunflower seed, soyabean, nigerseed, Cotton and sesamum Besides, the Umbrella Scheme “Pradhan Mantri Annadata Aay SanraksHan Abhiyan” (PM-AASHA) introduced via the authorities in 2018 will resource in presenting remunerative go back to farmers for his or her produce.
- The Umbrella Scheme consists of 3 sub-schemes i.E. Price Support Scheme (PSS) Price Deficiency Payment Scheme (PDPS) Private Procurement & Stockist Scheme (PPSS) on a pilot basis.
- The National Food Security Act, 2013 (NFSA) provides a legal basis for

the public distribution system (PDS) that earlier operated only as a regular government scheme.

- The NFSA made get right of entry to to the PDS a right, entitling everyone belonging to a "priority household" to receive five kg of meals grains in line with month at a subsidised charge no longer exceeding Rs 2/kg for wheat and Rs three/kg for rice.
- Priority households were further defined so as to cover up to 75% of the country's rural population and 50% in urban MSP, through evaluation, is devoid of any legal backing.
- Access to it, unlike subsidised grains through the PDS, isn't an entitlement for farmers.
- They cannot demand it as a matter of right.
- It is only a government policy that is part of administrative decision-making.
- The government proclaims MSPs for vegetation, however there's no regulation mandating their implementation.
- The Centre currently fixes MSPs for 23 farm commodities — **7 cereals** (paddy, wheat, maize, bajra, jowar, ragi and barley), **5 pulses** (chana, arhar/tur, urad, moong and masur), **7 oilseeds** (rapeseed-mustard, groundnut, soyabean, sunflower, sesamum, safflower and nigerseed) and **4 commercial crops** (cotton, sugarcane, copra and raw jute) — based on the CACP's recommendations.
- The simplest crop where MSP fee has a few statutory element is sugarcane. This is because of its pricing being ruled by means of the Sugarcane (Control) Order, 1966 issued below the Essential Commodities Act.
- After receiving the feed-back from them, the Cabinet Committee on Economic Affairs (CCEA) of the Union government takes a final

decision on the level of MSPs and other recommendations made by the CACP.

- **Procurement:** The Food Corporation of India (FCI), the nodal critical organization of the Government of India, at the side of different State Agencies undertakes procurement of crops.
- For complete details on MSP, kindly refer to MSP. Fair and remunerative price (FRP) Fair and remunerative price (FRP) is the minimum price at which rate sugarcane is to be purchased by sugar mills from farmers.
- The FRP is fixed by Union government on the basis of recommendations of Commission for Agricultural Costs and Prices (CACP).
- The 'FRP' of sugarcane is determined under Sugarcane (Control) Order, 1966.
- Recommended FRP is arrived at by means of taking into consideration various factors which include the fee of production, call for-deliver scenario, domestic & worldwide costs, inter-crop fee parity, and so forth.
- This will be uniformly applicable all over the country.
- Besides FRP, a few states together with Punjab, Haryana, Uttarakhand, UP, and TN announce a State Advised Price, that is normally higher than the FRP.
- The price fixed by the central government is the 'minimum price' and the one fixed by state government is the 'advised price' which is always higher than the 'minimum price' fixed by the center.

Topic 2. G-20

Importance for Prelims: IR

Piyush Goyal is Sherpa for G20 summit.

- The G20 is an informal institution of 19 international locations and the European Union, with representatives of the International Monetary Fund and the World Bank.
- The G20 membership comprises a mix of the world's largest advanced and emerging economies, representing about two-thirds of the world's population, 85% of global gross domestic product, and 80% Of world funding and over 75% of world exchange.
- G20 Members The members of the G20 are Argentina, Australia, Brazil, Canada, China, France, Germany, India, Indonesia, Italy, Japan, Republic of Korea, Mexico, Russia, Saudi Arabia, South Africa, Turkey, the UK, the USA, and the European Union.
- Spain as a permanent, non-member invitee, additionally attends chief

summits. Structure and Functioning of G20 The G20 Presidency rotates annually according to a system that ensures a regional balance over time.

- For the selection of presidency, the 19 countries are divided into 5 groups, each having no more than 4 countries.
- The presidency rotates between each group. Every yr the G20 selects a country from some other organization to be president.
- India is in Group 2 which also has Russia, South Africa, and Turkey.
- The G20 does not have a permanent secretariat or Headquarters. Instead, the G20 president is responsible for bringing collectively the G20 time table in session with other individuals and in reaction to developments in the international economic system.
- **TROIKA**: Every year when a brand new united states of america takes at the presidency (in this example Argentina 2018), it really works hand in hand with the preceding presidency (Germany, 2017) and the next presidency (Japan, 2019) and this is collectively known as TROIKA.
- This ensures continuity and consistency of the group's agenda.

Topic 3. EXPORT PROMOTION COUNCIL FOR EOUS AND SEZS (EPCES)

Importance for Prelims: Economy

Commerce Secretary B.V.R. Subrahmanyam has additionally assured the Export Promotion Council for EOUs and SEZs (EPCES) of a decision of the massive field shortages afflicting exports.

- Export Promotion Council for EOUs & SEZs (EPCES) has been set up via the Ministry of Commerce& Industry, Government of India, to provider the export promotional needs of EOUs & SEZs in the country.
- Over the years, EPCES has made an endeavour to facilitate consultations between different stakeholders including industry, policy makers, bank, financial institutions and multilateral agencies to facilitate greater competitiveness in the Indian EOUs & SEZ sector.
- EPCES is the best scheme specific & Multi-product Council and represents most important business sectors, like Textiles, Garments &Yarn, Gem &Jewellery, Leather Goods, Food &Agro products, Electronics & software, Information Technology, Pharmaceuticals &Chemicals, Engineering, Minerals, Granites & different stones, Plastic &Rubber goods and many others.
- India turned into one of the first Asian u.s. To apprehend the effectiveness of the Export Processing Zone (EPZ) version in promoting exports, with Asia's first EPZ set up in Kandla in 1965.
- EPCES has additionally been diagnosed by means of the Director General of Foreign Trade (DGFT), Ministry of Commerce & Industry, Government of India vide DGFT Public Notice No. 59/2002-7 dated 15.1.2003 and is registered under Societies Registration Act XXI of 1860.
- **Its objectives are:** To promote exports from India and to earn more foreign exchange for the country.

- To facilitate interaction between the EOUs/SEZs community and Government both at the Central and State level.
- To provide benefits of Market Access Initiative (MAI) Scheme rendered by the Central Government to Indian Exporters for assisting their export market development efforts.
- To collaborate with different export promotion councils/ export advertising businesses in India and comparable bodies in overseas nations in addition to with international companies working inside the area.

Topic 4. BIT COIN AS A LEGAL TENDER

Importance for Prelims: Economy

El Salvador adopts bit coin as legal tender.

- El Salvador became the first country in the world to adopt bit coin as legal tender, a real-world experiment proponents say will lower commission costs for billions of dollars Dispatched home from overseas however which critics warned may additionally fuel money laundering.
- Bit coin – Bit coin is a crypto currency first used in 2009 after being released as an open source software.
- The bit coin record uses Block chain technology.
- Bit coin is a type of digital currency that enables instant payments to anyone.
- Bit coin is based on an open-source protocol and is not issued by any central authority.
- Crypto currency is a specific type of virtual currency, which is decentralized and protected by cryptographic encryption techniques.
- Bit coin, Ethereum, Ripple are a few notable examples of crypto currencies.
- The beginning of Bit coin is doubtful, as is who founded it.
- A person, or a group of people, who went by the identity of Satoshi Nakamoto are said to have conceptualized an accounting system in the aftermath of the 2008 financial crisis.
- **India's Current Stand on Crypto currency:** In 2018, The Reserve Bank of India (RBI) issued a circular preventing all banks from dealing in cryptocurrencies.
- This circular became declared unconstitutional by means of the Supreme Court in May 2020.
- Recently, the government has announced to introduce a bill; Crypto

currency and Regulation of Official Digital Currency Bill, 2021, to create a sovereign digital currency and simultaneously ban all private crypto currencies.

- In India, the funds that have gone into the Indian block chain start-ups account for less than 0.2% of the amount raised by the sector globally.
- The current approach towards crypto currencies makes it near-impossible for block chain entrepreneurs and investors to acquire much economic benefit.

Topic 5. COMMON SERVICES CENTRES (CSC)

Importance for Prelims: Governance

CSC network may help expand passport services

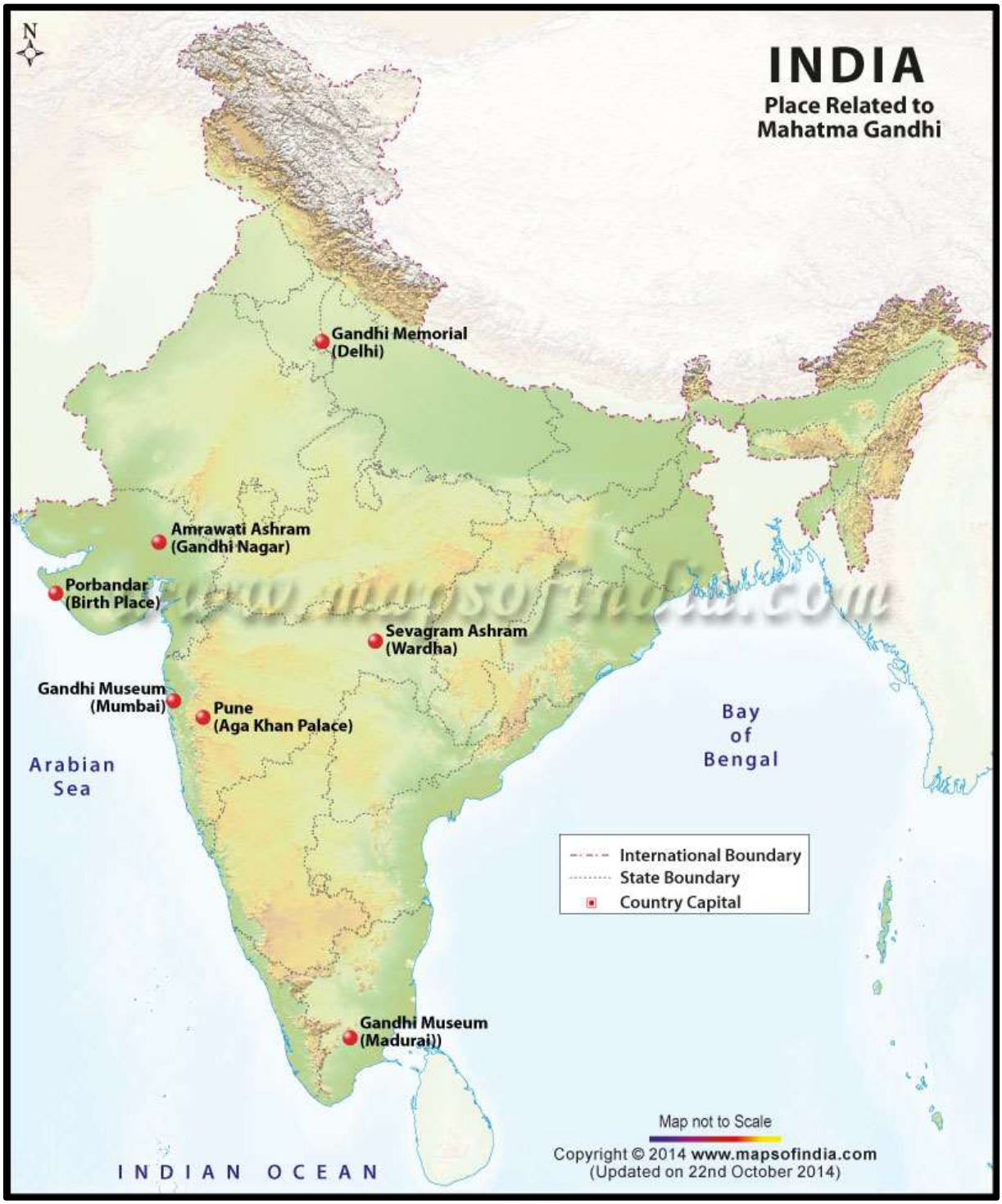
- The Common Services Centres (CSC), a unique purpose automobile of the Ministry of Electronics and Information Technology (MeitY), have received approvals to manipulate and operate Passport Seva Kendra (PSK) kiosks in rural areas.
- The CSCs have an extensive network of village-level entrepreneurs (VLEs) who run and operate over 2.5 lakh centres across India.
- Most of these centres are present either in rural or semi-city areas, wherein internet connectivity is not usually the quickest.
- In this sort of scenario, CSCs have controlled to create a niche for themselves by means of offering offerings along with registering humans for voter ID card, Aadhaar Card, assisting them pay their electricity and

other bills on time, as well as provide basic banking services.

- Over the beyond three years, CSCs have tied up with partners, both public and personal quarter, across domain names by leveraging their presence throughout the country.

Topic 6. GANDHI ASHRAM

Importance for Prelims: Art and Culture



Ashramwasis impacted by Gandhi Ashram revamp

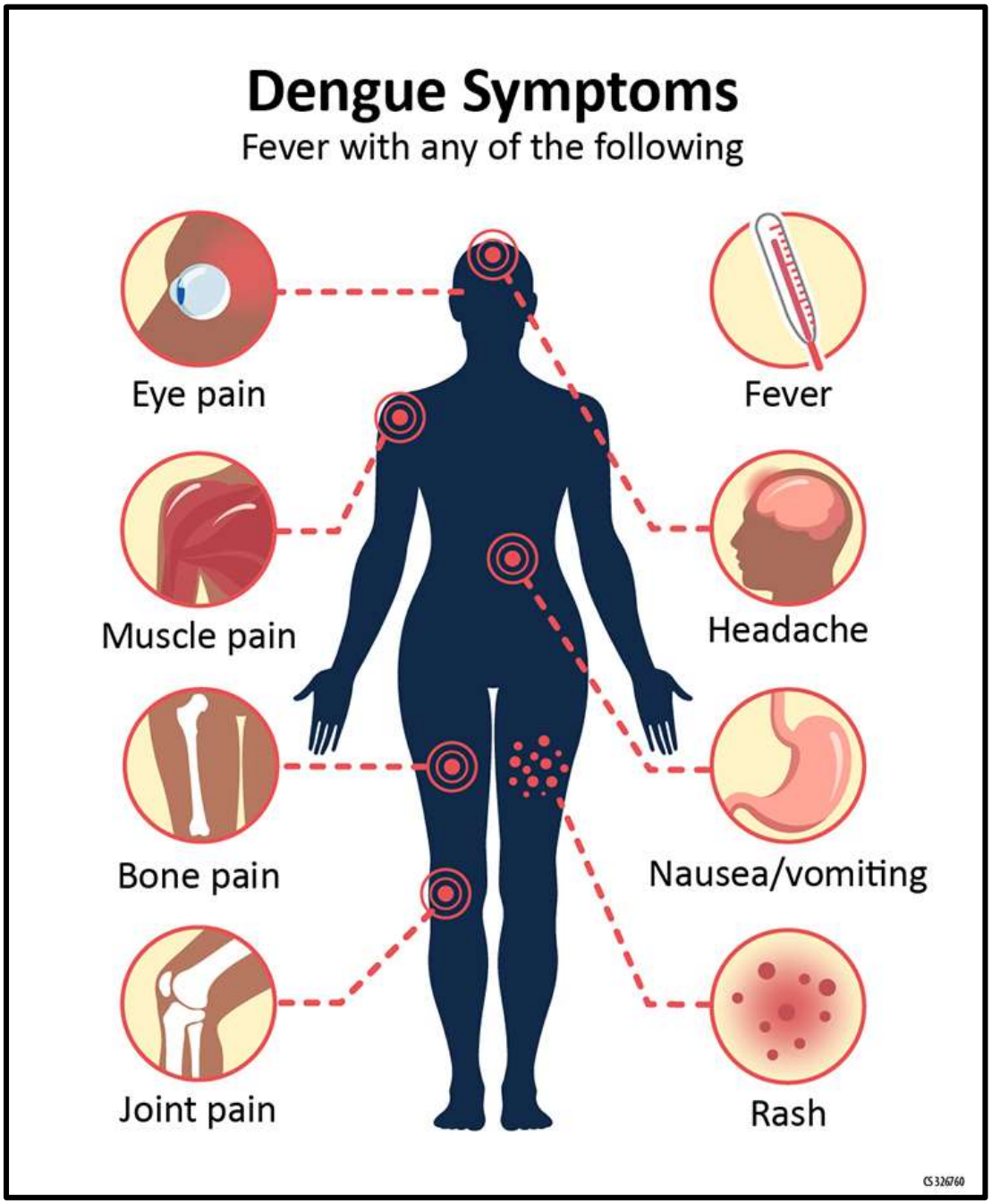
- Descendants of the folks that have been delivered into the Harijan Ashram that Mahatma Gandhi installed on the financial institution of the

Sabarmati river in 1917, to do various duties and help run the ashram, and those who persisted to live at the premises, now managed via one or the alternative agree with, name themselves

- They contain all communities as Gandhi believed in 'Sarva dharma sambhav', says a resident.
- Current residents include OBCs, Dalits, a few Muslims and some Brahmins.
- There are some 263 such families at the premises who're tenants of the respective trusts on whose land they are living and could have to be relocated so that it will proceed with the Gandhi Ashram redevelopment plan as envisaged by way of the planners, which encompass the Government of Gujarat, the Union Culture Ministry beneath the direct supervision of the Prime Minister's Office. Many of them do different jobs than what their forefathers did in Gandhi's time.
- The original ashram On his return from South Africa, Gandhi established the first ashram at Kochrab in 1915 which he shifted after the plagueto a piece of open Land on the banks of the river Sabarmati in 1917 for experiments in farming, animal husbandry, cow breeding, Khadi and associated sports.
- Originally called Harijan Ashram, unfold over 120 acres, the ashram changed into cut up into six trusts later.
- Of these the Gandhi Ashram area run by SAPMT has the Gandhi and Kasturba's residence — HridayKunj, Vinoba-Mira kutir, a guesthouse-Nandini — where prominent people like Rabindranath Tagore stayed, MaganNivas where Gandhi's nephew Maganlal Gandhi stayed and managed the ashram, besides Gandhi's writing desk, and spinning wheel among his personal artefacts, and a museum displaying books, manuscripts and photocopies of his correspondence, and photographs.

Topic 7. DENGUE

Importance for Prelims: Science and Tech



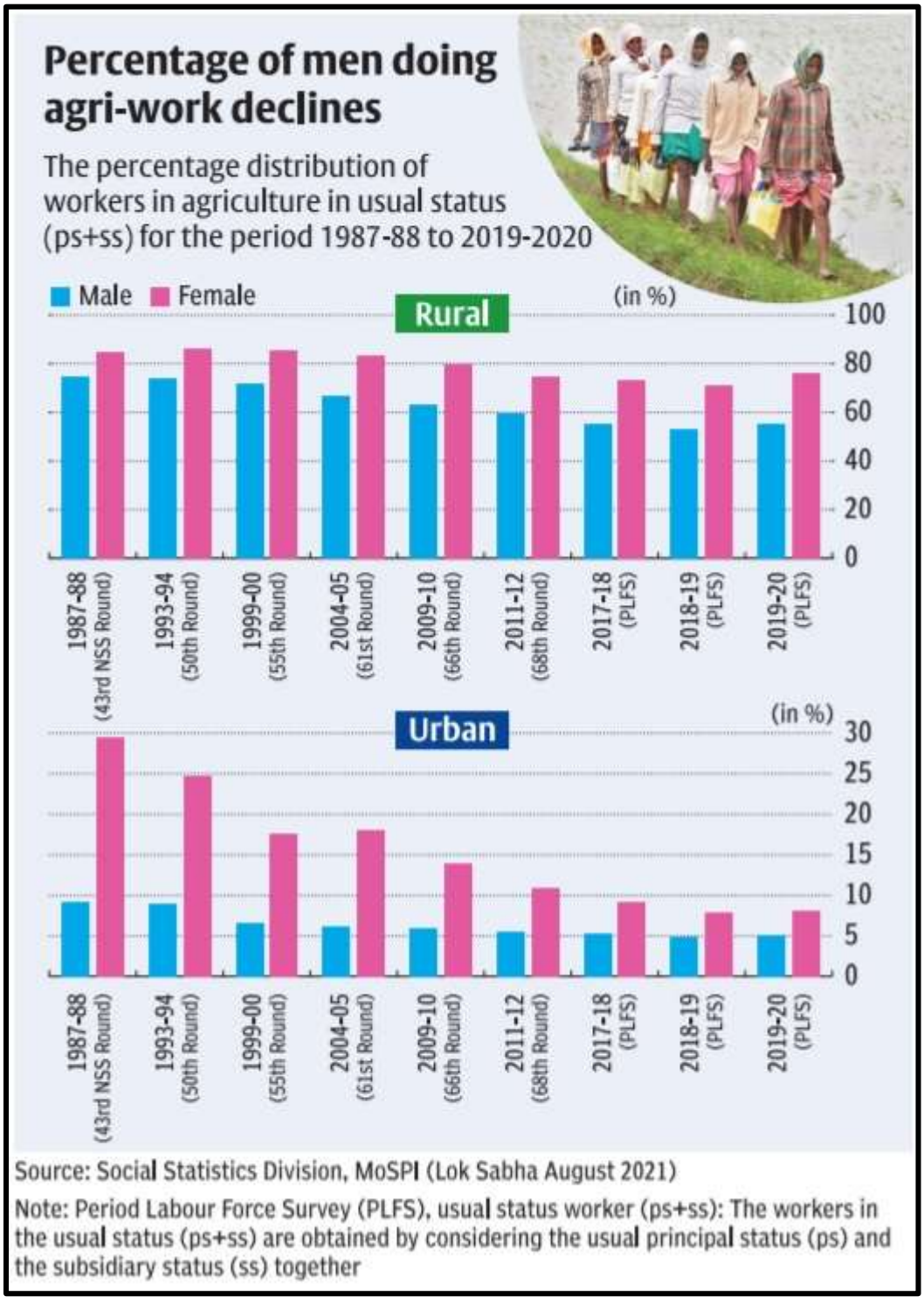
- Delhi sees rise in dengue cases Concept – Dengue is transmitted by several species of mosquitoes within the genus Aedes.
- Symptoms encompass fever, headache, muscle, and joint ache, and a function skin rash this is just like measles.
- There are four types of dengue strains, and type II and IV are considered

to be more severe and normally require hospitalisation.

- According to specialists, the aedes mosquito breeds in smooth stagnant water. Cases of malaria, chikungunya and viral fever are also rampant all through wet season.
- Dengue and chikungunya are caused by the bite of Aedesagypti mosquito, which breeds in clear water.
- The Anopheles mosquito, which causes malaria, can breed in both fresh and muddy water.
- For more records on dengue, please refer this.

Topic 8. AGRI WORKFORCE

Importance for Prelims: Agriculture



Women dominate agri workforce, but take home 22% less as wages.

- In rural areas, in 1987-88, about 74.5 per cent of the men workforce were doing agri-related work, while 84.7 per cent of women were working on

farms.

- There was a drastic decline in the male workforce in rural agriculture in 2004-05 with only 66.5 per cent men working in agriculture.
- But at the same time, 83.3 per cent of women continued in agriculture.
- As per the data presented by the Ministry of Agriculture to the Lok Sabha last month, there were 55.4 per cent men and 75.7 per cent women working in agriculture in rural areas in 2019-20.
- In urban areas, the male workforce in agriculture was never above 9.1 per cent (from 1987-88 to 2019-20). Here, the women workforce declined from 29.4 per cent in 1987-88 to 8.2 per cent in 2019-20.
- NSSO data Despite playing a significant role in agriculture, wages for women continue to remain low.
- The National Sample Survey Office's (NSSO) 2017 data show that the average daily wage rates for general agricultural men and women labourers are ₹264.05 and ₹205.32, respectively.
- This means women workers get 22.24 per cent lower wages. For non-agricultural labourers, the average daily wage rate was ₹271.17 for men and ₹205.90 for women (24 per cent lower).
- A non-agricultural women labourer gets slightly better wages compared to an agricultural women labourer.
- As in step with the Census 2011 conducted through the Registrar General of India, the extent of girls participation in agriculture as cultivators (main and marginal) is to the tune of 3.60 crore (30.33 per cent) and as agricultural labour (main and marginal) is to the tune of 6.15 crore (42.67 per cent).
- According to the Agriculture Census (2015-16), the total number of operational holdings of women is estimated at 20.44 million in the country.

- But the unique statistics on the number of ladies engaged in sowing, hoeing, weeding, and harvesting in agriculture isn't maintained within the Department of Agriculture and Farmers Welfare.

Topic 9. ASER REPORT

Importance for Prelims: Governance

ASER report finds huge drop in learning levels in Karnataka State

- It is a nationwide survey of rural education and learning outcomes in terms of reading and arithmetic skills that has been conducted by the NGO Pratham for the last 15 years.
- It makes use of Census 2011 because the sampling frame and is still an important national source of facts about kids's foundational skills across the usa.
- ASER 2018 surveyed children in the age group of 3 to 16 years and included almost all rural districts in India and generated estimates of foundational reading and arithmetic Abilities of kids inside the age group five to sixteen years.
- ASER 2019 suggested at the pre-education or education status of children in the age organization 4 to 8 years in 26 rural districts, centered at the "early years" and laid emphasis on "growing problem-fixing colleges and constructing a memory of children, and now not content material information".
- ASER 2020 is the first ever phone-based ASER survey and it was conducted in September 2020, the sixth month of national school closures.
- Its recent report – The Annual Status of Education Report (ASER), which was drawn up in March 2021 in only Karnataka this year, found a huge drop in learning levels in both reading and numeracy, especially for primary classes.
- What is annoying is that the survey, suggested nearly a year of 'mastering loss' amongst students throughout the State.

Topic 10. 'FOOD EMERGENCY' IN SRI LANKA

Importance for Prelims: IR

On August 30, 2021, Sri Lankan President Gotabaya Rajapaksa, using powers vested inside the united states of america's Public Security Ordinance, declared Emergency policies pertaining to the distribution of important meals gadgets.

- On August 30, 2021, Sri Lankan President Gotabaya Rajapaksa, using powers vested within the united states of america's Public Security Ordinance, declared Emergency guidelines concerning the distribution of critical food items.
- The policies sought to empower authorities to offer vital meals gadgets at a "concessionary rate" to the public via buying stocks of critical food gadgets, along with paddy, rice and sugar, at government-guaranteed prices, and prevent market irregularities and hoarding.
- According to Austin Fernando, a retired civil servant who served as Commissioner General of Essential Services in the 1980s, the put up came into prominence after the 1983 'Black July' riots to ensure that affected families — Tamils who were targeted and attacked — had food supplies and other essentials; to facilitate their movement and return to their homes.
- The opportunity of meals shortage has grabbed international headlines, with the government's drastic measures against hoarding, triggering speculation over meals security in Sri Lanka that is home to 21 million humans.
- The pandemic's lethal blow given that early 2020, to all foremost resources of forex profits — exports, worker remittances and tourism — has in addition compounded the monetary stress.
- Sri Lanka's economy contracted by 3.6 % last year.
- According to the Central Bank of Sri Lanka, the Sri Lankan rupee

depreciated by 10.1% against the dollar this year.

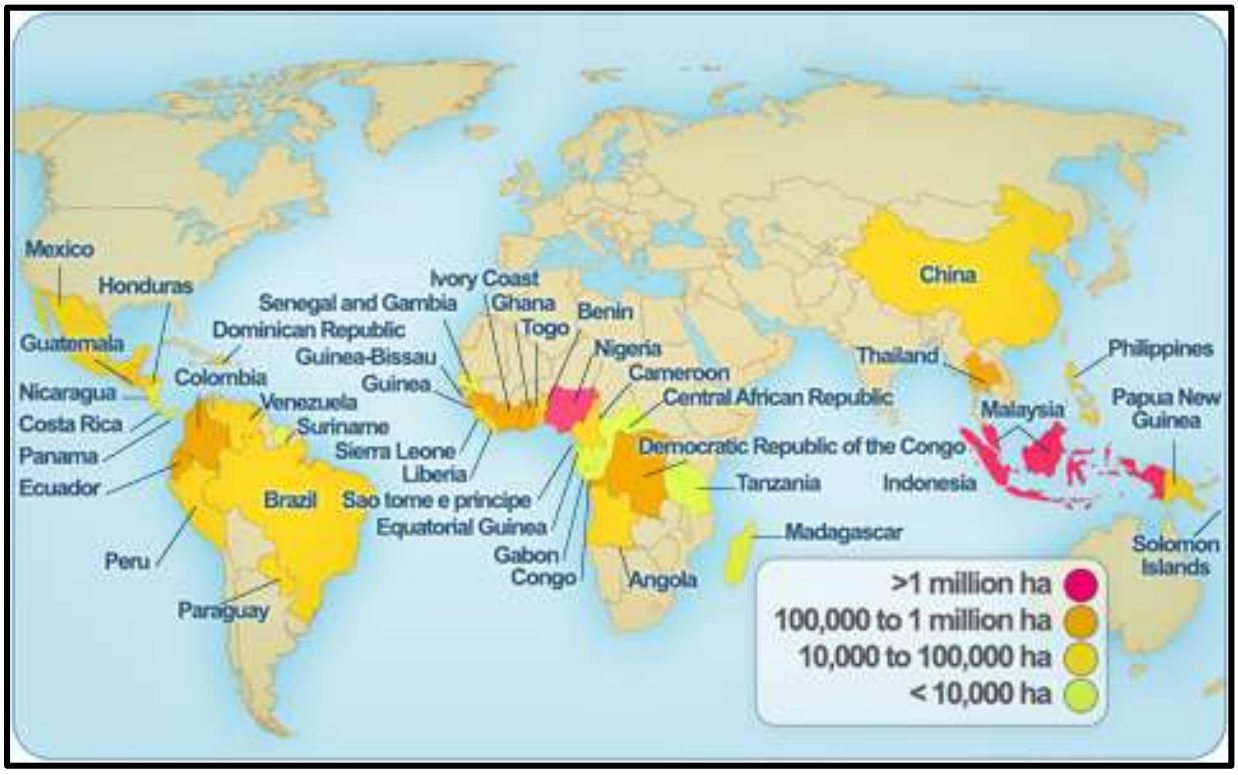
- It hovered around 200 against a dollar last week.
- The fear of a possible food shortage also stems from the Rajapaksa administration's decision in April to ban import of chemical fertilizers and adopting an "organic only" approach.
- Meanwhile, many, especially daily ¬wage earners, and low ¬income families, are complaining about being unable to afford, and in many cases access, essentials such as milk, sugar, and rice At some stage in the modern-day lockdown, imposed on August 20 following a speedy surge in day by day Covid-19 cases and fatalities, and extended twice considering that.
- Prices of essential commodities — including rice, dhal, bread, sugar, vegetables, fish — have risen several times during the pandemic, and more rapidly in recent weeks.

Topic 11. PALM OIL

Importance for Prelims: Geography

Table 1: Identity Characteristics for Palm Oil

Item No.	Identity Characteristics	Observed min. to max.
(i)	Apparent density, g/ml at 50°C	0.8889 to 0.8896
(ii)	Refractive index no. 50°C	1.4521 to 1.4541
(iii)	Saponification value, mgKOH/g oil	194 to 205
(iv)	Unsaponifiable matter, %	0.19 to 0.44
(v)	Fatty acid composition (wt% as methyl esters)	
	C12:0	0.1 to 0.5
	C14:0	0.9 to 1.5
	C16:0	39.2 to 45.8
	C16:1	0 to 0.4
	C18:0	3.7 to 5.4
	C18:1	37.4 to 44.1
	C18:2	8.7 to 12.5
	C18:3	0 to 0.6
	C20:0	0 to 0.5
(vi)	Iodine Value (Wij's)	50.4 to 53.7
(vii)	Slip Melting Point, °C	33.8 to 39.2
(viii)	Total carotenoids (as β-carotene), mg/kg	474 to 689



'Several studies have shown that palm oil poses no risk to health'.

- India imports 60 per cent of the edible oil it consumes and runs up an import bill of ₹80,000 crore.
- Of that, palm oil alone accounts for 55 per cent.
- While palm is the most prolific and efficient source of vegetable oil, it has a really bad reputation.
- **Activists call it the coal of the food world:** bad for health, bad for the planet.
- In south-east Asia, palm monoculture has eaten into almost 10 million hectares of forests.
- In middle-class perception, it's an unhealthy oil.
- In the hunt for self-sufficiency, the authorities closing week added the National Mission for Edible Oil and Oil Palm (MNEO-OP), which seeks to present a big push to domestic palm oil cultivation.
- In India it's far a farmers' crop, grown in current farmlands with intercropping. Palm oil is wealthy in diet A and E, and in coenzymes like ubiquinone that assist fight cardiac illnesses.
- Palm is good for sequestering carbon. It is sincerely a shape of afforestation.
- A palm tree produces two to three new leaves per month.
- A lot of biomass, too, gets added to the soil.
- The requirement of pesticides and herbicides is significantly less for oil palm compared to other crops.
- If you look at the productivity levels of groundnuts, soya bean, sunflower, sesame, and if you look at the oil palm productivity, it stands very tall.
- On an average four to six tonnes of oil per hectare per year is produced through oil palm. For different oilseeds, it's miles approximately 0.Four tonnes.

- The total water requirement is less than that for rice or sugarcane. Palm oil is cheap due to the fact it's far quite efficient.
- Not because its bad.
- The cost of cultivation is low and yields very high. For more information on National Edible Oil Mission – Oil Palm (NMEO-OP)

Topic 12. UNIVERSAL DECLARATION OF THE RIGHTS OF RIVERS

Importance for Prelims: Environment

Give rivers their rights, activists tell IUCN World Conservation Congress

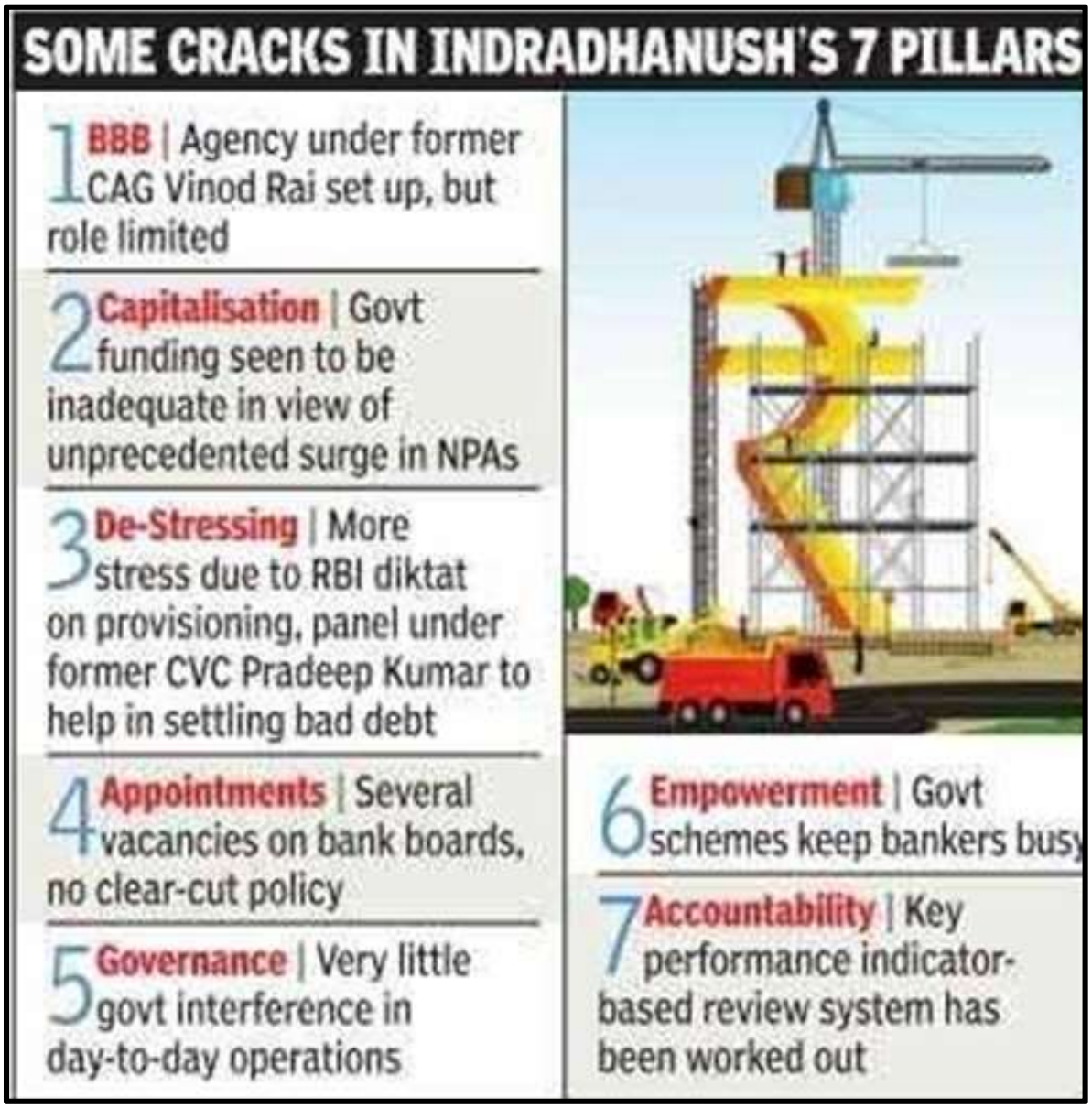
- The announcement is a civil society initiative to outline the fundamental rights to which all rivers are entitled.
- **The declaration states that all rivers are:** Living entities. Entitled to fundamental rights. Entitled to legal guardians.
- In the one year since the declaration, rights have been recognised or declared for the Boulder Creek watershed in the United States, the Magpie river in Canada, waterways in Orange County within the US, the Alpayacu river in Ecuador, and the Paraná River and its wetlands in Argentina.
- Some 1,700 individuals and 211 organisations from over 40 countries have pledged support to the declaration.
- Several campaigns calling for rights to be accorded to rivers have also incorporated the declaration.
- These include campaigns for the Lempa river in El Salvador, the Tavignanu river in France, all rivers in Mexico's Oaxaca state, the Ethiope river in Nigeria, the Indus river in Pakistan and the Frome river in the United Kingdom. Several amici curiaebriefs in defence of the 'rights of rivers' also reference the rights recognised in the Universal Declaration of the Rights of Rivers.
- The proper to recognize rivers as dwelling entities in place of mere human assets started out in 2008.
- That yr, Ecuador became the primary u . S . To constitutionally understand the Rights of Nature.
- In 2017, a treaty agreement between the Whanganui Iwi (a Māori tribe) and the New Zealand government identified the Whanganui River as a

legal man or woman. Also in 2017, a Constitutional Court decision in Colombia recognised the rights of the Atratoriver and a court in Uttarakhand recognised the Ganga and Yamuna rivers as legal persons with rights. This was later stayed.

- According to one statistic, only 37 per cent of rivers longer than 1,000 km still flow freely due to dams being built on them.

Topic 13. BANKS BOARD BUREAU (BBB)

Importance for Prelims: Economy



BBB recommends Atul Kumar Goel for PNB MD & CEO's position

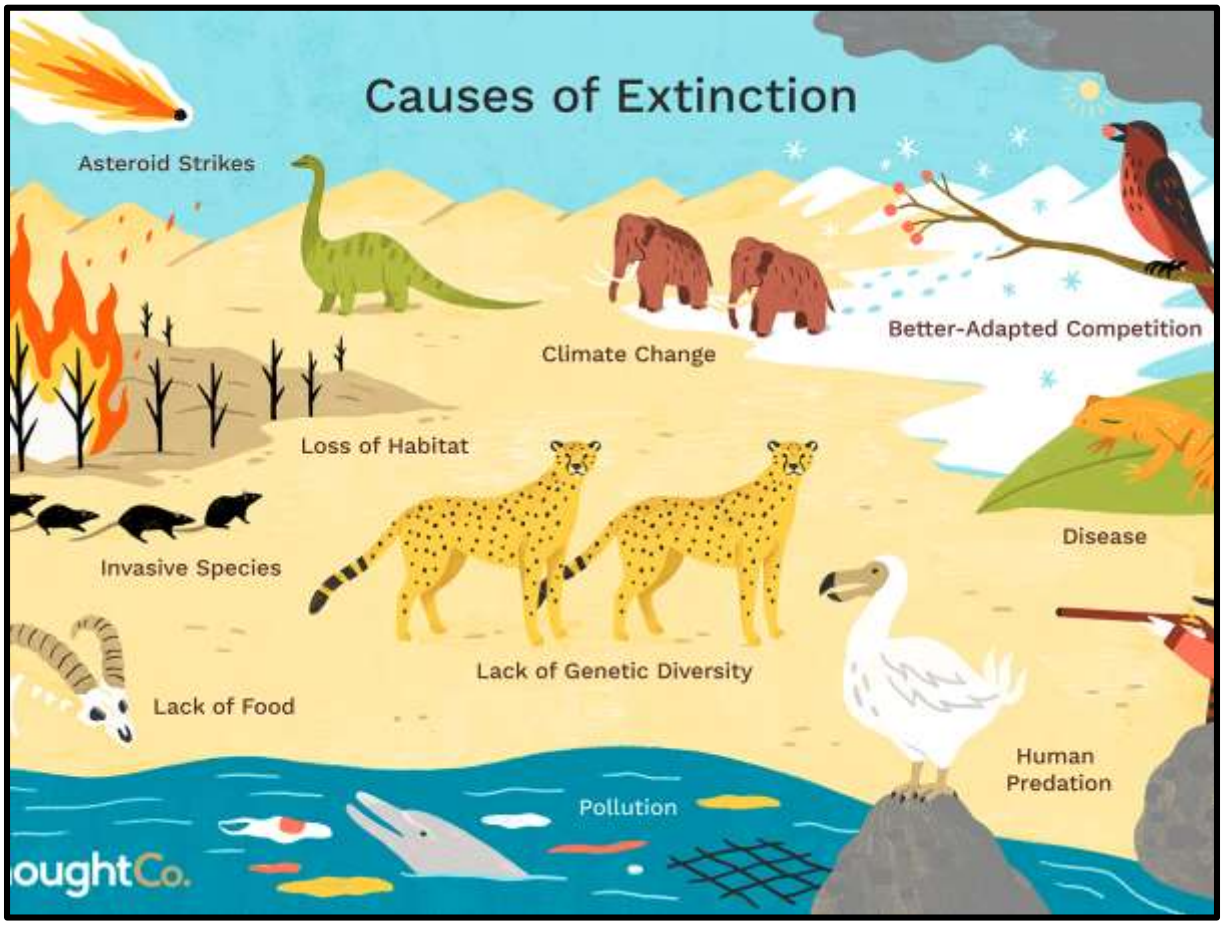
- Banks Board Bureau (BBB) is an autonomous body of the Government of India tasked to improve the governance of Public Sector Banks, recommend selection of chiefs of government owned banks and financial institutions and to help banks in developing strategies and capital raising plans.
- The Ministry of Finance takes the final decision on the appointments in

consultation with the Prime Minister's Office.

- It had changed the Appointments Board of Government.
- In February 2016, the NDA government accredited the notion for putting in BBB and it started out functioning in April 2016.
- The BBB works as step toward governance reforms in Public Sector Banks (PSBs) as recommended via P.J. Nayak Committee.
- The BBB was the part of Indradhanush Plan of government, aimed at revamping the Public Sector Banks.
- Banks Board Bureau comprises the Chairman, 3 ex-officio contributors i.E Secretary, Department of Public Enterprises, Secretary of the Department of Financial Services and Deputy Governor of the Reserve Bank of India, and five expert members, two of which are from the private sector.
- The Banks Board Bureau is a public authority as defined within the Right to Information Act, 2005.

Topic 14. SPECIES EXTINCTION

Importance for Prelims: Environment



Over 390 species of sharks, rays, chimaera in danger of extinction:

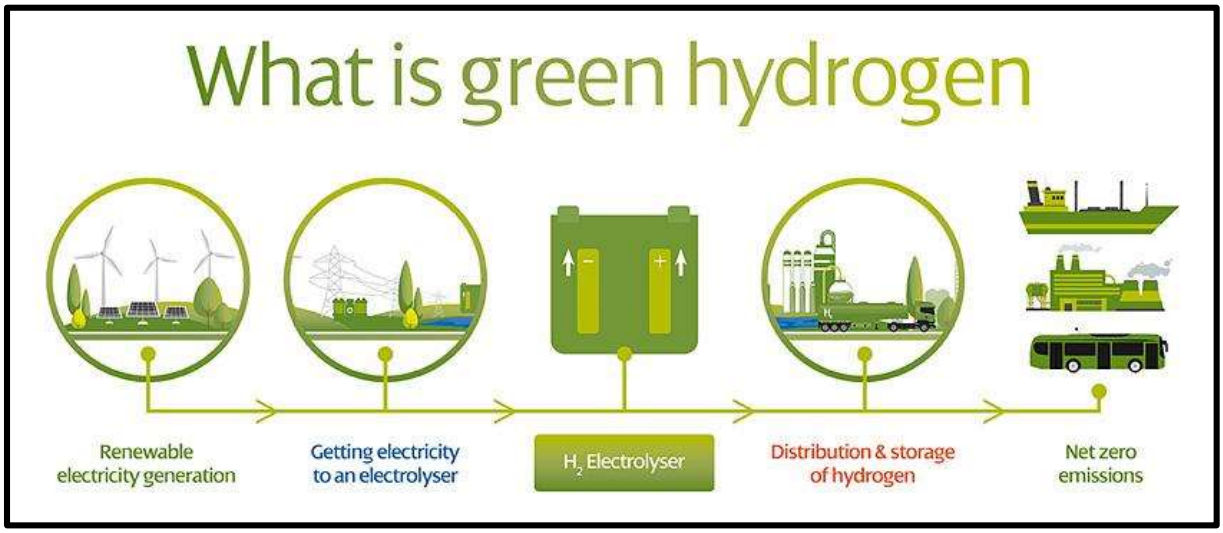
Study

- Over 37 per cent of the world's sharks, rays and chimaeras are facing extinction due to overfishing, compounded by loss and degradation of habitat, climate change and pollution, warned a new study.
- As many as 220 of the total 661 species of rays are threatened, followed by sharks (167 of 536) and chimeras (four of 52), according to the extensive survey done from 2013 to 2021.
- The chondrichthyan fishes that confronted extinction extra than doubled since the final global survey was achieved in 2014 that confirmed 181 of a total of 1,041 species had been threatened.

- One ray species, the Java stingaree (Urolophusjavanicus), may have already long past extinct in step with the reclassification of threatened species with the aid of the International Union for Conservation of Nature (IUCN) in advance this year.
- Overfishing, mainly by industrial-scale fisheries, is the main threat for all the 391 threatened chondrichthyan fish species, the study found. Most threatened species are used for meals consumption by means of people.
- Habitat loss and degradation of habitat, in addition to overfishing, caused nearly a fifth of the species to be threatened, according to the report.
- The researchers known as for technological know-how-primarily based limits on fishing, powerful marine protected areas, among different tactics to minimize mortality of threatened species.

Topic 15. GREEN HYDROGEN

Importance for Prelims: Environment



Green hydrogen, a new ally for a zero-carbon future.

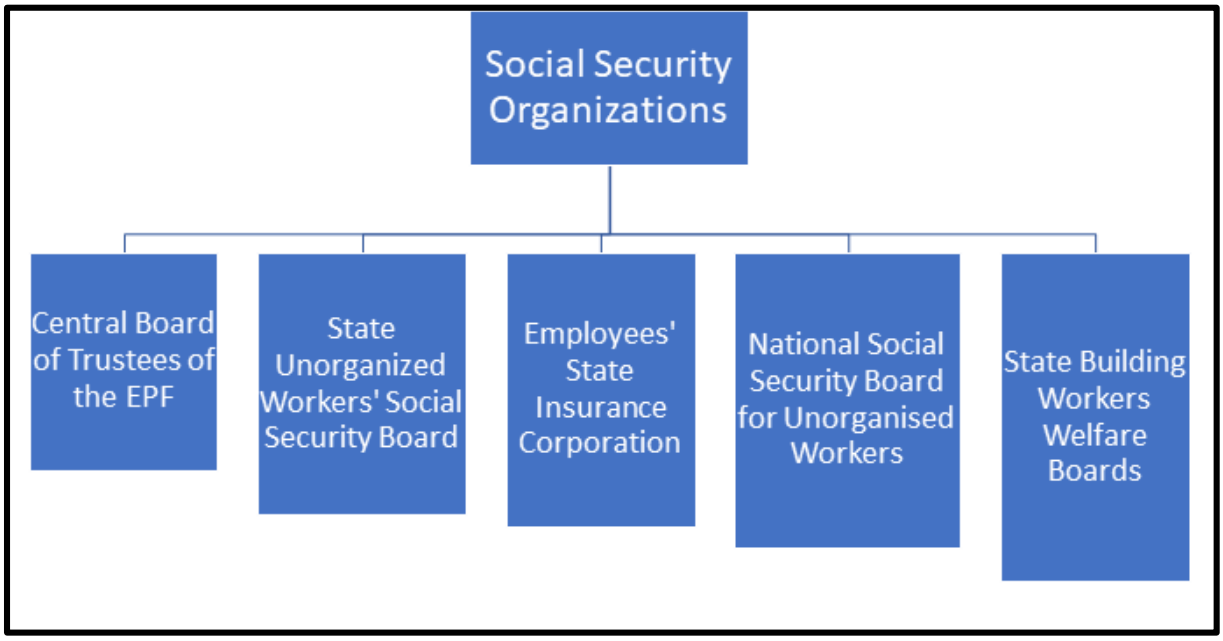
- Hydrogen is the most abundant element on the planet, but rarely in its pure form which is how we need it.
- It has an energy density almost three times that of diesel.
- This phenomenon makes it a rich source of energy, but the challenge is to compress or liquefy the LH2 (liquid hydrogen); it needs to be kept at a stable minus 253° C (far below the temperature of minus 163° C at which Liquefied Natural Gas (LNG) is stored; entailing its 'prior to use exorbitant cost'.
- Black hydrogen is produced by way of use of fossil gasoline, while red hydrogen is produced via electrolysis, however using energy from nuclear strength assets. 'Green hydrogen', the emerging novel concept, is a zero-carbon fuel made with the aid of electrolysis the use of renewable electricity from wind and sun to break up water into hydrogen and oxygen.
- Presently, less than 0.1% or say ~75 million tons/year of hydrogen capable of generating ~284GW of power, is produced. According to

studies by the International Renewable Energy Agency (IREA), the production cost of this 'green source of energy' is expected to be around $1.5 per kilogram (for nations Having perpetual sunshine and big unused land), by the year 2030; via adopting diverse conservative measures. India is the world's fourth largest energy consuming country (behind China, the United States and the European Union), according to the IEA's forecast, and will overtake the European Union to become the sector's third power client with the aid of the yr 2030.

- India is also gradually unveiling its plans.
- The Indian Railways have introduced the u . S . A .'s first experiment of a hydrogen¬-gas cell technology-primarily based train by means of retrofitting an existing diesel engine; this will run underneath Northern Railway at the 89 km stretch between Sonepat and Jind.
- For more information on National Hydrogen Mission.

Topic 16. CODE ON SOCIAL SECURITY 2020

Importance for Prelims: Economy



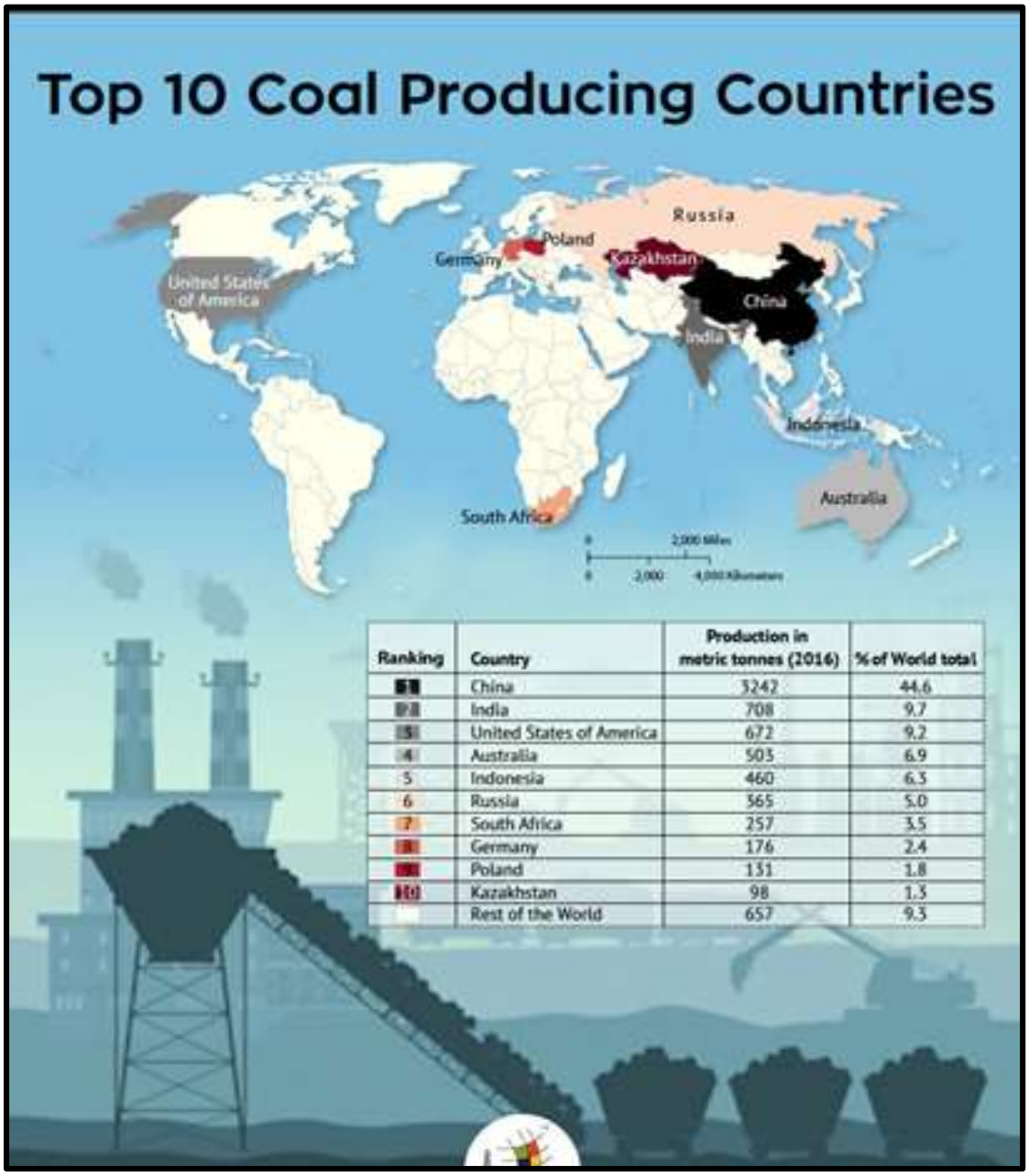
Implementing social security code a priority, says Minister.

- The Indian Parliament, in a bid to rationalise the forty four labour codes in India, consolidated them into four labour codes and enacted them by using 2020.
- **The four labour codes are –** The Code on Wages, 2019; Industrial Relations Code, 2020; Code on Social Security, 2020; and Code on Occupational Safety, Health and Working Conditions, 2020.
- The Code on Social Security, 2020is a code to amend and consolidate the legal guidelines referring to social protection with the intention to increase social security to all employees and workers either in the organised or unorganised or any other sectors.
- Social protection refers to protection measures furnished to employees to ensure healthcare and profits safety in case of certain contingencies consisting of antique age, maternity, or injuries.
- The act amalgamates nine central labour enactments relating to social security.

- It consolidated The Employees' Compensation Act, 1923, The Employees' State Insurance Act, 1948, The Employees' Provident Funds and Miscellaneous Provisions Act, 1952, The Employment Exchanges (Compulsory Notification of Vacancies) Act, 1959, The Maternity Benefit Act, 1961, The Payment of Gratuity Act, 1972, The Cine Workers Welfare Fund Act, 1981, The Building and Other Construction Workers Welfare Cess Act, 1996 Unorganised Workers' Social Security Act 2008.
- The Code has widened coverage by including the unorganised sector, fixed term employees and gig workers, platform workers, inter-state migrant workers etc.
- There is uniformity in figuring out wages for the motive of social protection blessings.
- The Code additionally provides for the putting in place of a 'National Social Security Board'.
- The capabilities of the Board include recommending schemes to the principal government and also monitoring the schemes for the special varieties of employees, advising the Government on subjects regarding the administration of the Code among others.
- For more information on Code on Social Security.

Topic 17. COAL

Importance for Prelims: Geography



Ranking	Country	Production in metric tonnes (2016)	% of World total
1	China	3242	44.6
2	India	708	9.7
3	United States of America	672	9.2
4	Australia	503	6.9
5	Indonesia	460	6.3
6	Russia	365	5.0
7	South Africa	257	3.5
8	Germany	176	2.4
9	Poland	131	1.8
10	Kazakhstan	98	1.3
	Rest of the World	657	9.3

'No new coal plants needed to meet 2030 demand'

- Coal is a sedimentary, natural rock that's flammable composed in general of carbon in conjunction with other elements together with hydrogen, Sulphur, oxygen, and nitrogen.
- It is used mainly in the generation of thermal power and smelting of iron ore. Also called black gold.

- **Formation of Coal:** Coal is formed from dead plants remains.
- These dead plants get compressed beneath rocks in a low oxygen environment.
- Due to excessive strain and heat, this natural rely gets converted into Peat (partially decayed organic remember).
- This peat is converted into low carbon coal i.e., lignite. More warmness and stress convert lignite into bituminous after which to anthracite.

Types Of Coal:

1. On the basis of carbon content and order of formation: PEAT– 40% CARBON (NE) LIGNITE– 40-60% CARBON – Low Quality – Brown in colour- found in Neyveli in TN. BITUMINOUS– 60-80% CARBON. It is soft coal. In India, a lot of the coal comes under this class. ANTHRACITE– 80-90% CARBON. It is in particular discovered inside the district of Reasi within the nation of Jammu and Kashmir.
2. On the basis of usage: Coking coal– High carbon content, less moisture, less sulphur, less ash. It forms coke when heated in the absence of air. It is used in the iron and steel industry to make pig iron. Non Coking coal– It is used in the thermal power plants to generate power. Sulphur content is high and hence cannot be used in iron and steel industry. NOTE: There is a shortage of good quality coking coal in india. So we partially import good grade coking coal for the iron and steel industry.
3. On the basis of origin: Gondwana Coal- old-[250 million years old]: The most important Gondwana coal in India are found exclusively in peninsular plateau especially in Damodar, Godavari,Mahanadi and Sone valley Jharia (JH) is the largest coal field in India followed by Raniganj (WB). Other critical coal mining centre are: Singrauli– MP, Korba-CH,Talcher and Rampur- Odisha, Singareni– Telangana, Chanda-Wardha– MH, Pandur– AP Tertiary coal fields [15 – 60 million years

old]:Tertiary coal occurs in Assam, Meghalaya, Arunachal Pradesh and Nagaland Largest coal reserves in India:

JH>ODISHA>CH>WB>MP>AP Import Of Coal: As per the present Import policy, coal can be freely imported (under Open General Licence) by the consumers themselves.

- Coking Coal is being imported by means of Steel Authority of India Limited (SAIL) and different Steel production units specifically to bridge the space between the requirement and indigenous availability and to improve the quality.
- Coal based power plants, cement plants, captive power plants, sponge iron plants, industrial consumers and coal traders are importing non-coking coal.
- Coke is imported mainly by Pig-Iron manufacturers and Iron & Steel sector consumers using mini-blast furnace.
- **Impact Of Coal on Environment:** Coal mining and use of coal in power stations and factories have led to degradation of the environment. Coal mining can cause contamination of drinking water.
- Power stations and factories that burn coal also consume large quantities of water.
- Combustion of carbon releases a number of greenhouse gases that is a major cause of global warming and climate change. Smog and acid rain also are because of using coal.
- Fly ash can also contaminate land and water.
- The use of coal as gasoline reasons negative health troubles and deaths.
- It is the main motive of bronchial asthma, bronchitis, strokes, heart attacks, mercury poisoning, lung most cancers.
- There is an international campaign going to decrease the dependence on coal and flow to purifiers and more green fuels.

Topic 18. DOCTRINE OF PITH AND SUBSTANCE

Importance for Prelims: Polity

The Doctrine of Pith and Substance is one of the oldest theories used to resolve constitutional matters in India. Unfolding the literal meaning of the doctrine, the "pith" in it refers back to the proper nature or the essence of something and the "substance" in it manner an critical part, thereby, the doctrine is termed because the "maximum tremendous part of something in which its authentic essence lies".

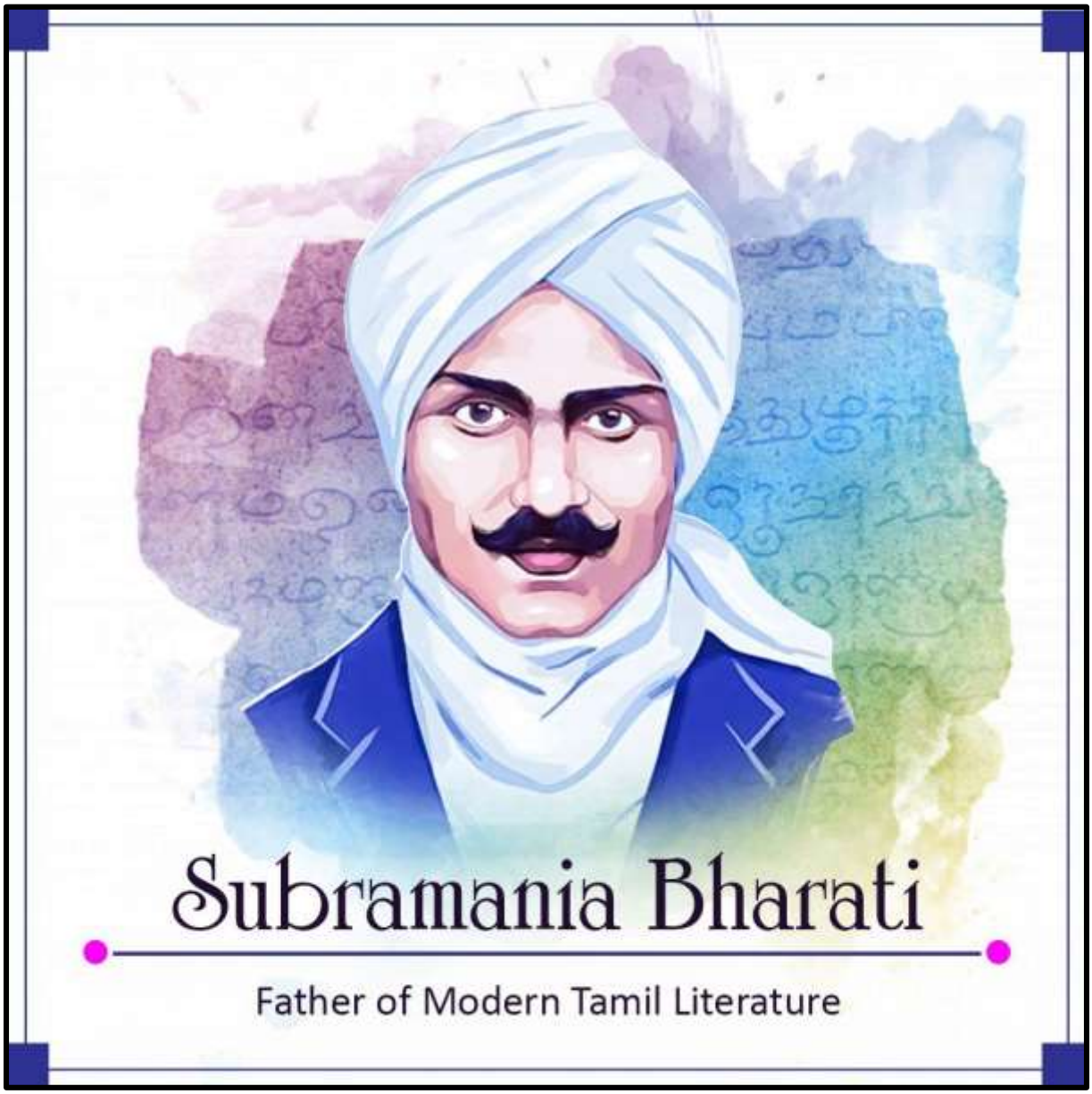
- The power granted to legislatures to formulate a statute beneath 3 lists of the seventh agenda within the Constitution of India is bound to overlap at certain factors however this can't be used as a motive to make the complete statute null and void.
- Therefore, incidental outcomes or encroachments are permissible below Constitutional Law whilst figuring out the competence of particular legislatures to the volume of problem matters inside the 3 lists is in question. This rule is referred to as the Doctrine of Pith and Substance.
- The Doctrine of Pith and Substance relates to Article 246 that deals with the three lists enumerated in the Seventh Schedule of the Indian Constitution.
- It is used whilst there may be a question on the competence of the legislature on making a specific enactment underneath the three lists.
- The court for that matter must look into the substance of the enactment.
- If the court finds that the law formulated is very much within the substance of the matter assigned to the framers then the statute is deemed completely valid or as the case may be.
- However, whilst identifying so, if the courtroom unearths out that there is an incidental effect of the software of the statute on any other field that is past the competence of the legislature, then such findings must be

discarded.

- The cause being, that it's miles feasible that a specific statute might also incidentally encroach upon a matter past the legislature's competence however such encroachment doesn't render the whole statute to be a nullity.

Topic 19. SUBRAMANIA BHARATI

Importance for Prelims: History



On his 100th death anniversary on Sept 11, a new book and a podcast throw light on unknown facets of the literary icon.

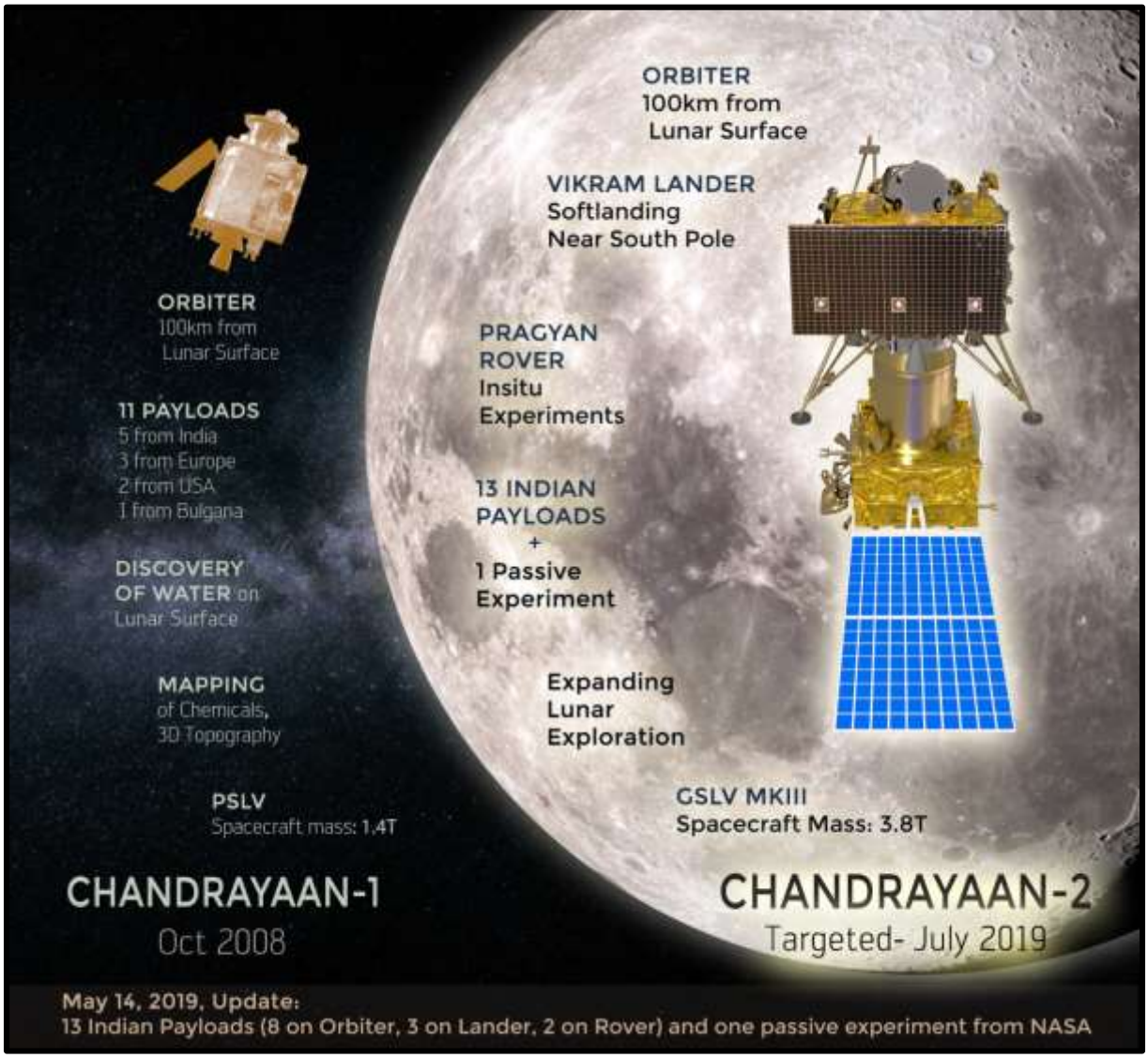
- Tamil creator, poet, journalist and nationalist, Subramania Bharati, whose a hundredth demise anniversary falls on Sep 11, also wrote drastically in English, of which little is thought. Popularly referred to as "Mahakavi Bharathi" ("Great Poet Bharathi"), he turned into a pioneer of cutting-edge Tamil poetry and is considered one of the greatest Tamil literary

figures of all time.

- His numerous works included fiery songs kindling patriotism during the Indian Independence movement.
- He fought for the emancipation of women, against toddler marriage, stood for reforming Brahminism and faith.
- He turned into additionally in team spirit with Dalits and Muslims.
- In The Coming Age, published by means of Penguin Modern Classics, edited and supplied via his outstanding-granddaughter Mira T Sundara Rajan, we get a peep into the Tamil literary icon's unique English writings.
- Bharati noticed himself as standing on the arena's stage, accomplishing a talk with writers and thinkers round the arena, touching the hearts of human beings, and locating not unusual humanity.
- His writings are so contemporary, they could have been written yesterday, today, or tomorrow.
- He covered political, social and spiritual themes.
- The songs and poems composed via Bharathi are very regularly utilized in Tamil cinema and feature become staples in the literary and musical repertoire of Tamil artistes all through the sector. "Kannan Pattu" "Nilavum Vanminum Katrum" "Panchali Sabatam" "Kuyil Pattu" are examples of Bharathi's wonderful poetic output.
- He published the sensational "Sudesa Geethangal" in 1908.
- In 1949, he became the first poet whose works were nationalised by the state government.
- He edited and published journals India, Vijaya, Bala Bharatham and Suryodayam.

Topic 20. CHANDRAYAAN-2

Importance for Prelims: Science and Tech



2 years on, ISRO has released the information gathered, from confirmation of the presence of the water molecule to data about solar flares.

- The failure of Chandrayaan-2, India's second mission to the Moon, to make a soft-landing on the lunar surface had led to much disappointment.
- The lander and rover malfunctioned in the final moments and crash-landed, getting destroyed in the process.
- The Orbiter a part of the assignment has been functioning typically, and inside the two years on account that that setback, the various units

onboard have accrued a wealth of latest statistics that has introduced to our know-how approximately the Moon and its surroundings.

- The Findings –WATER MOLECULE: The presence of water on the Moon had already been confirmed by Chandrayaan-1, India's first mission to the Moon that flew in 2008.
- Before that, NASA missions Clementine and Lunar Prospector too had picked up indicators of water presence.
- But the instrument used on Chandrayaan-1 became now not sensitive sufficient to hit upon whether the alerts got here from the hydroxyl radical (OH) or the water molecule (H2O, which too has OH). Using way more touchy gadgets, the Imaging Infra-Red Spectrometer (IIRS) onboard Chandrayaan-2 has been capable to differentiate between hydroxyl and water molecules and locating specific signatures of each.
- This is the most precise information about the presence of H2O molecules on the Moon till date.
- Previously, water was known to be present mainly in the polar regions of the Moon.
- Chandrayaan-2 has now discovered signatures of water in any respect latitudes, although its abundance varies from vicinity to vicinity.
- Dual Frequency Synthetic Aperture Radar, a microwave imaging device, has reported unambiguous detection of potential water ice on the poles because it has been capable to differentiate houses of surface roughness from that of water ice, which is a first.
- **MINOR ELEMENTS:** The Large Area Soft X-Ray Spectrometer (CLASS) measures the Moon's Xray spectrum to examine the presence of major elements such as magnesium, aluminium, silicon, calcium, titanium, iron, etc.
- This instrument has detected the minor factors chromium and manganese

for the first time thru far off sensing, way to a higher detector.

- The finding can lay the route for information magmatic evolution at the Moon and deeper insights into the nebular situations in addition to planetary differentiation.
- CLASS has mapped nearly 95% of the lunar surface in X-rays for the first time.
- Sodium, also a minor element on the Moon surface, was detected without any ambiguity for the first time.
- **STYUDYING THE SUN:** One of the payloads, known as Solar X-ray Monitor (XSM), except reading the Moon through the radiation coming in from the Sun, has accumulated statistics approximately solar flares.
- XSM has observed a large number of micro flares outside the active region for the first time, and according to ISRO, this "has great implications on the understanding of the mechanism behind heating of the solar corona", which has been an open problem for many decades.

How does all this help?

- While the Orbiter payloads build upon current understanding of the Moon in terms of its floor, sub-surface, and exosphere, it additionally paves the path for destiny Moon missions.
- Four aspects — mineralogical and volatile mapping of the lunar surface, surface and subsurface properties and processes involved, quantifying water in its various forms across the Moon surface, and Maps of factors present on the moon — could be key for destiny scope of labor.
- A key outcome from Chandrayaan-2 has been the exploration of the permanently shadowed areas as well as craters and boulders below the regolith, the loose deposit comprising the pinnacle surface extending up to 3-4m in depth.
- This is expected to help scientists to zero in on future landing and drilling

sites, including for human missions. Some key future Moon missions that hope to make use of such data include the Japan Aerospace Exploration Agency (JAXA)-ISRO collaboration Lunar Polar Exploration (LUPEX) mission scheduled for launch in 2023/2024.

- Its aim is to obtain knowledge of lunar water resources and to explore the suitability of the lunar polar region for setting up a lunar base.
- NASA's Artemis missions plan to enable human landing on the Moon beginning 2024 and target sustainable lunar exploration by 2028.
- The Chinese Lunar Exploration Programme too plans to set up a prototype of the International Lunar Research Station (ILRS) at the lunar south pole and construct a platform supporting big-scale medical exploration.

What was missed because of the crash-landing?

- The lander Vikram and rover Pragyaan were carrying instruments to carry out observations on the surface.
- These were supposed to pick up additional information about the terrain, and composition and mineralogy.
- While the instruments on board the Orbiter are making "worldwide" observations, those at the lander and rover could have supplied lots more nearby information.
- The various sets of facts ought to have helped put together an extra composite photograph of the Moon.
- ISRO is sending a fresh mission, Chandrayaan-3, planned for next year.
- It is expected to have only a lander and rover, and no Orbiter.
- About Chandrayaan-2 It is an integrated 3-in-1 spacecraft of around 3,877 kg consisting of an Orbiter of the Moon, Vikram (after Vikram Sarabhai) – the lander and Pragyan (wisdom) – the rover, all prepared with medical devices to look at the moon.

- The Chandrayaan-2 become India's first try to land on the lunar floor. ISRO had planned the landing on the South Pole of the lunar floor.
- However, the lander Vikram hard-landed in September last year.
- Its orbiter, which is still in the lunar orbit, has a mission life of seven years.
- This mission was conducted for topographical researches and mineralogical studies to have a better understanding of the Moon's origin and evolution. Chandrayaan 2 Mission became launched from the Satish Dhawan Space on July 22, 2019, with the aid of GSLV Mk III-M1.
- The main aim of Chandrayaan 2 was to trace the location and abundance of lunar water on the moon's surface.
- About Chandrayaan-1 Chandrayaan Mission was launched by the Indian Space Research Organisation (ISRO) and was India's first mission to the moon.
- The spacecraft was launched on 22nd October 2008 by a modified version of the PSLV C-11 from Satish Dhawan Space Centre, Sriharikota, Andhra Pradesh.
- Chandrayaan-1, ISRO's first exploratory challenge to moon, became designed to simply orbit the Moon and make observations with devices on board.
- Chandrayaan-1 operated for 312 days as opposed to the intended two years but the mission achieved 95% of its planned objectives.
- Key Findings of Chandrayaan-1 Confirmed presence of lunar water Evidence of lunar caves formed through an historical lunar lava float Past tectonic activity were located on the lunar surface.
- The mission successfully detected the presence of titanium and calcium along with the accurate measurements of iron, aluminium and magnesium on the moon.

Topic 21. FOOD SAFETY AND STANDARDS AUTHORITY OF INDIA (FSSAI)

Importance for Prelims: Governance

FOOD SAFETY AND STANDARDS AUTHORITY OF INDIA

Inspiring Trust, Assuring Safe & Nutritious Food

Ministry of Health and Family Welfare, Government of India

FSSAI is looking at tightening the labelling norms for pan masala

- It proposes to bring in amendments within the labeling and show policies to make health warnings extra seen on pan masala packs.
- According to the draft amendments, the FSSAI has proposed that the fitness caution ought to cowl 50 percent of the front of the p.C. Of merchandise.
- It is mandatory for pan masala packs to carry the health warning 'chewing of pan masala is injurious to health'.
- Unlike cigarette packs, so far there was no labelling regulation regarding the size and display of the health warning on pan masala products.
- Nomenclature for breads – The draft is also proposing changes in the nomenclature of breads with the proliferation of various kinds of breads on retail shelves.
- The food safety authority is looking to set standards for the minimum quantity of strong point ingredients, along with complete wheat, multi-grain, or milk, that want to be delivered to the flour used for making bread.
- According to the draft, bread makers can be allowed to label their product

as whole wheat bread best if it is a product of flour comprising a minimum of 75 in line with of whole wheat flour.

- Similarly, to be able to label a product as wheat bread or brown bread, it needs to be made with at least 50 per cent whole grain flour.
- In the flour used to make multi-grain bread, at least 20 per cent of the grains used should be those other than wheat.
- The draft amendments also endorse to bring in changes inside the labeling norms for another type of speciality bread together with milk bread, oatmeal bread, bran bread, raisin bread, garlic bread, oregano bread, and fruit bread, among others. About FSSAI – It is an autonomous statutory body that maintains the food safety and standards in India.
- FSSAI is administered by the Ministry of Health & Family Welfare. The Body is practical as in line with the Food Safety and Standards Act, 2006.
- The FSSAI has its headquarters at New Delhi.
- The authority additionally has 6 regional workplaces positioned in Delhi, Guwahati, Mumbai, Kolkata, Cochin, and Chennai.
- The FSSAI comprises of a Chairperson and twenty individuals out of which one – 1/3 are to be girls.
- The Chairperson of FSSAI is appointed by the Central Government.
- **Food Safety and Standards Rule, 2011 provides for:** The Food Safety Appellate Tribunal and the Registrar of the Appellate Tribunal, for adjudication of food safety cases.
- It covers Licensing and Registration, Packaging and Labelling of Food Businesses, Food Product Standards and Food Additives Regulation.
- It prohibits and restricts on sales or approval for Non-Specified Food and Food Ingredients, such elements may also purpose damage to human fitness.
- It provides for Food Safety and Standards on Organic Food and regulates

Food Advertising.

- **Important Initiatives by FSSAI Eat Right India –** It is a Pan-India cycle motion known as as 'Swasth Bharat Yatra' aimed to create client focus about consuming safe and nutritious meals.
- **Clean Street Food –**This involves training the street food vendors and making them aware of the violations as per the FSS Act 2006.
- **Diet4Life –** This is every other initiative taken by means of FSSAI, to spread consciousness about metabolic issues.
- **Save Food, Share Food, Share Joy –** Encouraging human beings to keep away from meals wastage and promote food donation.
- Through this, FSSAI intends to connect food-collecting agencies with the food-producing companies and share the food with the ones in need.
- **Heart Attack Rewind –** It is the first mass media campaign of FSSAI.
- It is aimed to support FSSAI's target of eliminating trans fat in India by the year 2022.
- **FSSAI-CHIFSS –** It is a collaboration between FSSAI and CII-HUL Initiative on Food Safety Sciences to promote collaborations between Industry, Scientific Community, and Academia for food protection.

Topic 22. 13TH BRICS SUMMIT

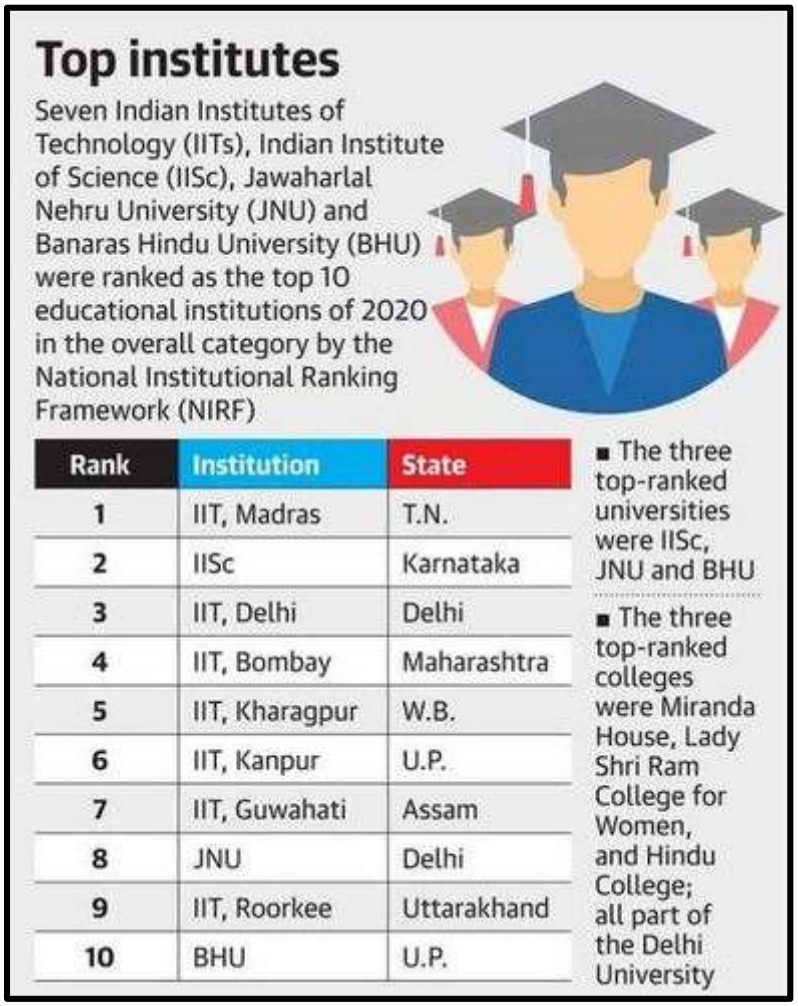
Importance for Prelims: IR

13th BRICS Summit was recently held virtually, chaired by India.

- The theme of the 13th BRICS Summit is, 'BRICS at 15: Intra-BRICS Cooperation for Continuity, Consolidation and Consensus.'
- The thirteenth BRICS summit held certainly known as for an "inclusive intra-Afghan speak" for balance in Afghanistan.
- The digital summit, chaired with the aid of Prime Minister Narendra Modi, became dominated via the tendencies in Afghanistan and adopted the BRICS Counter-Terrorism Action Plan. With the settlement on Remote Sensing Satellite Constellation between our space corporations, a new chapter of cooperation has begun.
- They stress the need to contribute to fostering an inclusive intra-Afghan dialogue so as to ensure stability, civil peace, law and order in the country.
- They underscore the priority of fighting terrorism, together with stopping attempts by way of terrorist corporations to apply Afghan territory as terrorist sanctuary and to perform attacks in opposition to other nations.
- The report, titled the New Delhi Declaration, additionally referred to as for addressing the humanitarian state of affairs in Afghanistan, and entreated the need to uphold rights of ladies, kids, and minorities.
- It will be the third time that India will be hosting the BRICS Summit after 2012 and 2016.
- The Indian Chairship of BRICS this year coincides with the fifteenth anniversary of BRICS. For more information on BRICS, please click here.

Topic 23. NATIONAL INSTITUTE RANKING FRAMEWORK (NIRF)

Importance for Prelims: Governance



India Rankings 2021 under the National Institutional Ranking Framework were recently released.

- National Institute Ranking Framework or NIRF is the first-ever effort by the government to rank higher education institutions (HEIs) in the country.
- Before NIRF's launch in 2016, HEIs had been generally ranked by means of private entities, specially information magazines.
- While participation in the NIRF was voluntary in the initial years, it turned made compulsory for all authorities-run instructional establishments in 2018.

- This yr, more or less 6,000 institutions have participated in NIRF — about two times the number in 2016.
- In order to be ranked, all education institutions are assessed on five parameters: teaching, learning and resources, research and professional practices, graduation outcomes, outreach and inclusivity, and NIRF lists Out nice establishments throughout 11 classes – average countrywide ranking, universities, engineering, university, clinical, management, pharmacy, regulation, architecture, dental and research.

Why did the Union government decide to rank HEIs?

- The idea of NIRF has its roots in the global rankings.
- The union government and government-run HEIs were quite upset about their standing in QS World University Rankings and the Times Higher Education World University Ranking.
- To counter this, India determined to emulate the Chinese example.
- The Shanghai Rankings, performed via the Shanghai Jiao Tong University, was born out of this in 2003.
- Nine Chinese universities and three from India (Indian Institute of Science (IISc), IIT Kharagpur, and IIT Delhi) made it to the pinnacle 500 within the first edition of the Shanghai Rankings.
- While the Shanghai Rankings were international in character from the first year itself, the NIRF only ranked Indian HEIs.
- NIRF Ranking 2021 The Indian Institute of Technology (IIT), Madras was ranked the best higher education institution in the country for the third year in a row by the Union Education Ministry, which released its India Rankings 2021 below the National Institutional Ranking Framework.
- The IITs dominated the overall rankings, grabbing seven of the top 10 positions.

- The Indian Institute of Science (IISc), Bengaluru was ranked second, followed by the IITs in Bombay, Delhi, Kanpur, Kharagpur, Roorkee and Guwahati.
- Jawaharlal Nehru University (JNU) and Banaras Hindu University (BHU) were at rank nine and 10, respectively.
- Among universities, the IISc become ranked one, followed by the JNU, the BHU, the University of Calcutta, the Amrita Vishwa Vidyapeetham, Coimbatore, Jamia Millia Islamia, New Delhi, the Manipal Academy of Higher Education, Jadavpur University, the University of Hyderabad and Aligarh Muslim University.

Topic 24. THAMIRABARANI CIVILIZATION

Importance for Prelims: History

'Thamirabarani civilisation 3,200 years old'

- In a development that has the capacity to rewrite the history of the Indian subcontinent, a US-based lab has carbon-dated the last found from an historical civilization in Tamil Nadu to at least 3,200 years.
- The finding has established that the Porunai River (Thamirabarani) civilization dates back to 3,200 years.

- The results of the Beta Analytic Testing showed that rice and soil existed dates back to 1155 BCE.
- This is the oldest civilization perhaps, older than the Vaigai civilization which is thought to be 2,six hundred years antique.
- The findings of artifacts at the excavation sites prove that the civilization existed previous to the 4th century BC.
- A silver coin that was found at the Keezhadi excavation with sun, moon engravings belong to 4th century BC, that is prior to the Mauryan Emperor Ashoka's period.
- Chief Minister M.K. Stalin said in the assembly that a museum will be set up at Tirunelveli to exhibit findings from the excavations, at a cost of Rs.15 crore.
- The museum can be known as Porunai, an historical name for the Thamirabarani river.

Topic 25. INDIAN RAILWAYS ORGANIZATION FOR ALTERNATIVE FUELS (IROAF)

Importance for Prelims: Infrastructure

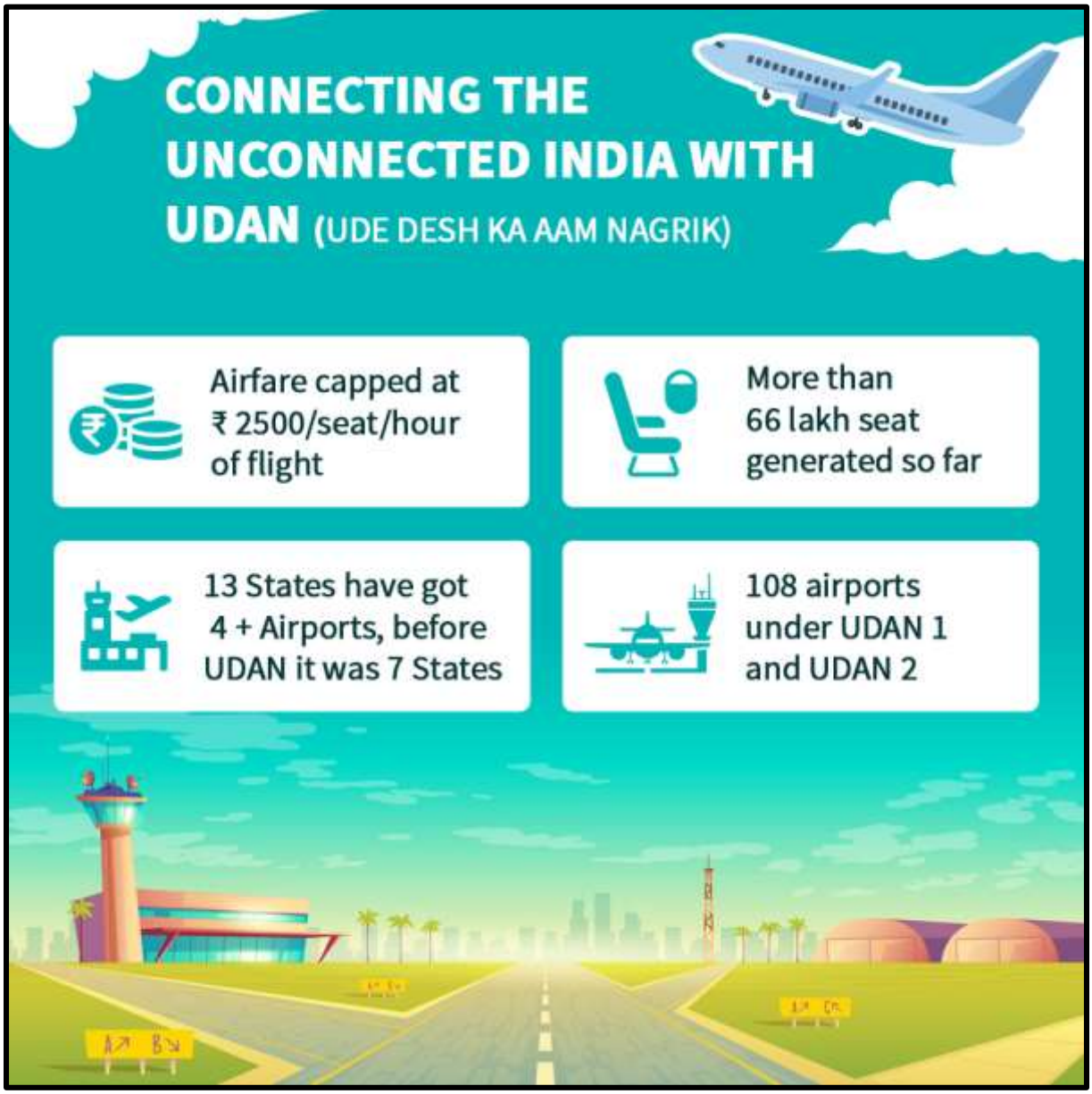
Railway Board order announces closure of green fuel wing.

- IROAF is a separate enterprise that works in the field of green fuels for transport.
- **Its vision –** to emerge as a world class organisation in setting standards, development, research and execution in fuel and energy efficient and eco-friendly technologies, primarily for assimilation in IR.
- The Ministry of Railways has announced the closure of the Indian Railways Organisation for Alternative Fuels (IROAF), an enterprise headquartered in New Delhi, that was formed exclusively to promote green energy by introducing alternative energy and fuel-efficient and emission ¬control technologies across the railway network.
- The existing work handled by IROAF — solar power and hydrogen fuel cell projects — was transferred to the Principal Chief Electrical Engineer and Chief Administrative Officer, Northern Railway.

- In keeping with its mission towards green railways, the IROAF had invited bids just last month in August for hydrogen fuel cell¬-based trains to start the concept of hydrogen mobility in the country along the 89¬km Sonipat-Jind sector of Northern Railway.
- Two diesel electric multiple units and two hybrid locos were planned for conversion to hydrogen fuel cell power movement leading to a savings of ₹2.3 crore annually.
- The IROAF was also working on research and development of projects relating to use of compressed natural gas (CNG) as a substitute to high-speed diesel to create a clean environment and reduce cost of transportation

Topic 26. UDAN Scheme

Importance for Prelims: Infrastructure



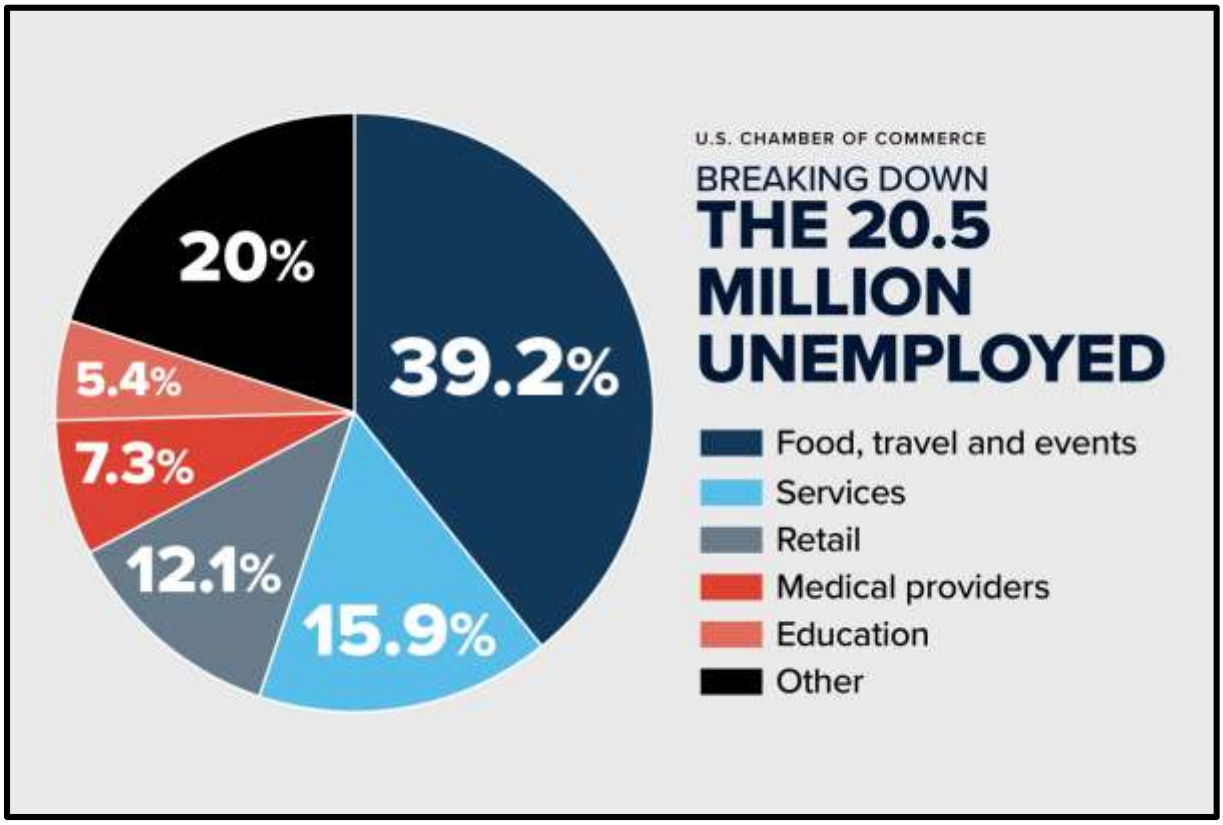
Scindia sets target of 50 more UDAN routes.

- Ude Desh ka Aam Nagrik (UDAN) changed into released as a local connectivity scheme underneath the Ministry of Civil Aviation in 2016.
- It is an innovative scheme to develop the regional Aviation market.
- The objective of scheme is to create low-cost but economically feasible and worthwhile flights on local routes so that flying will become less expensive to the commonplace man even in small towns.

- The scheme envisages providing connectivity to un-served and underserved airports of the country through the revival of existing air-strips and airports.
- The scheme is operational for a duration of 10 years. Under-served airports are those which do now not have multiple flight a day, while unserved airports are those in which there aren't any operations.
- Financial incentives from the Centre, state governments and airport operators are extended to selected airlines to encourage operations from unserved and underserved airports, and keep airfares affordable.

Topic 27. UNEMPLOYMENT

Importance for Prelims: Economy



Joblessness at 10.3% in Oct-Dec 2020; more women unemployed than men.

- Unemployment happens whilst a person who is actively attempting to find employment is unable to find work.
- The maximum common degree of unemployment is the unemployment fee, that's the number of unemployed human beings divided by way of the number of human beings within the exertions pressure.
- Unemployment rate = (Unemployed Workers / Total labour force) × 100

Definitions:

- Labour Force Participation Rate: It is the percentage of people in the labour force (those who are working or seeking or available for work) in the population.
- Worker Population Ratio is the percentage of employed people. Unemployment fee shows the proportion of human beings unemployed

the various labour force.

Unemployed:

- A person who's unable to get work for even an hour within the final seven days despite in search of employment is taken into consideration unemployed
- Types of Unemployment in India – The PLFS The PLFS is an annual survey conducted by the National Statistical Office.
- It was started in 2017 and it essentially maps the state of employment in the country.
- It collects data on several variables such as the level of unemployment, the types of employment and their respective shares, the wages earned from different types of jobs, the number of hours worked etc.
- Earlier this process become executed with the aid of Employment-Unemployment Surveys, which were performed once in 5 years.
- Calculation Methods There are two ways and they differ in terms of the reference period.

1. 1. The Usual Status (US) The survey ascertains whether a person had been employed for enough days in 365 days preceding the survey. The Usual Status is the only one that is showing a reversal in the unemployment trend The NSO unemployment number most routinely quoted is the one based on Usual Status.
2. 2. The Current Weekly Status (CWS) The survey tries to figure out whether a person was adequately employed in the seven days preceding the survey.

- But this method isn't comparable with both the global norm (say the only observed by way of International Labour Organization) or the non-public area exercise (such as the surveys performed by the Centre for Monitoring Indian Economy or CMIE).

- The CWS is closer to the global norm.
- The CWS method shows that unemployment didn't really fall The CWS is also more relevant because it is this approach that the NSO uses for understanding quarterly changes in unemployment.
- So if we begin looking on the unemployment fee and LFPR trends compiled using the CWS method, the emerging photo is extra in sync with either the statistics from CMIE or indeed all the other indicators of the broader.

Topic 28. AUTONOMOUS DISTRICT COUNCIL

Importance for Prelims: Polity

Lone BJP member left in Mizoram's tribal Chakma Autonomous District Council.

- The Sixth Schedule of the Constitution of India allows for the formation of autonomous administrative divisions which have been given autonomy within their respective states.
- Most of these autonomous district councils are located in North East India but two are in Ladakh, a region administered by India as a union territory. Presently, 10 Autonomous Councils in Assam, Meghalaya,
- Mizoram and Tripura are fashioned by means of distinctive feature of the Sixth Schedule with the relaxation being formed because of other regulation.
- The governor is empowered to organise and re-organise the autonomous

districts.

- Thus, he can increase or decrease their areas or change theirnames or define their boundaries and so on.
- If there are distinct tribes in an self reliant district, the governor can divide the district into numerous self sustaining regions.
- Each self-reliant district has a district council which includes 30 individuals, of whom four are nominated by using the governor and the last 26 are elected on the idea of adult franchise.
- The elected members hold office for a term of five years (unless the council is dissolved earlier) and nominated members hold office during the pleasure of the governor.
- Each autonomous region also has a separate regional council.
- The district and regional councils administer the areas under their jurisdiction.
- They could make laws on certain designated topics like land, forests, canal water, shifting cultivation, village administration, inheritance of assets, marriage and divorce, social customs and so forth.
- But all such laws require the assent of the governnor.
- The district and regional councils inside their territorial jurisdictions can represent village councils or courts for trial of fits and instances between the tribes
- They hear appeals from them.
- The jurisdiction of excessive court over those fits and cases is particular via the governor.
- The district council can establish, construct or manage primary schools, dispensaries, markets, ferries, fisheries, roads and so on in the district.
- It can also make policies for the manage of money lending and buying and selling bynon-tribals.

- But such regulations require the assent of the governor.
- The district and regional councils are empowered to assess and collect land revenue and to impose certain specified taxes.
- The acts of Parliament or the state legislature do not observe to self sufficient districts and self-sustaining regions or apply with specified changes and exceptions.

Topic 29. SOLAR STORM

Importance for Prelims: Science and Tech

The paper presented at the ACM SIGCOMM 2021 Conference last month noted that a powerful solar storm can cause a disruption of the internet, damage submarine cables and communication satellites.

- A solar storm or a Coronal Mass Ejection as astronomers call it, is an ejection of highly magnetised particles from the sun.
- These particles can tour numerous million km in step with hour and can take about 13 hours to 5 days to attain Earth. Earth's atmosphere protects us human beings from those particles.
- But the particles can interact with our Earth's magnetic field, induce strong electric currents on the surface and affect man-made structures.
- The first recorded solar typhoon came about in 1859 and it reached Earth in approximately 17 hours.
- It affected the telegraph community and many operators experienced electric shocks.
- A solar typhoon that took place in 1921 impacted New York telegraph and railroad structures and another small-scale hurricane collapsed the strength grid in Quebec, Canada in 1989.
- A 2013 file mentioned that if a solar hurricane just like the 1859 one hit the US today, about 20-forty million people could be without electricity for 1-2 years, and the full economic cost could be $zero.6-2.6 trillion.
- The Sun goes through an 11-year cycle – cycles of high and low activity. It also has an extended one hundred-12 months cycle.
- During the last three decades, when the internet infrastructure was booming, it was a low period.
- And very soon, either on this cycle or the next cycle, we are going towards the peaks of the 100-12 months cycle.

- So it is highly likely that we might see one powerful solar storm during our lifetime.
- Independent solar observations show that solar superstorms capable of such largescale damage may occur only a few times in a century.

Topic 30. 2+2 DIALOGUE

Importance for Prelims: IR

India-Australia hold 2+2 dialogue

- A 2+2 dialogue refers to a mechanism between two nations where two appointed ministers from each country met up to discuss their strategic and security interests.
- The goal is to enhance excessive-level engagements on bilateral, regional, and international issues.
- It is a layout of dialogue where the defence/overseas ministers or secretaries meet with their counterparts from other united states of America.
- India holds such talks with Australia, Japan and the USA.

Topic 31. CORAL REEFS

Importance for Prelims: Environment

The world's coral reefs have suffered terribly in 30 years, but are resilient.

- Coral reefs have suffered terribly in the past three decades. Yet, they're resilient and might be able to face up to demanding situations posed with the aid of a warming world, a latest study by the Government of Australia has stated.
- The have a look at also stated reducing neighborhood pressures on coral reefs to preserve their resilience would be critical in the years yet to come.
- **Status of Coral Reefs of the World:** 2020 became prepared by using the Global Coral Reef Monitoring Network, at the side of the Australian authorities.
- There were many shocking aspects noted in the report as well. For instance, the 1998 coral bleaching event killed eight per cent of the

world's coral.

- Subsequent activities among 2009 and 2018 killed 14 in step with cent of the world's coral.
- Most declines in global coral cover were associated with either rapid increase in sea surface temperature (SST) anomaly or sustained high SST anomaly.
- There had been 20 according to cent extra algae on the world's coral reefs in 2019 than in 2010.
- The increase in the amount of algae, was associated with declines in the amount of hard coral, the study said.
- The examine cited that when you consider that 2010, almost all areas had exhibited a decline in average coral cowl.
- According to estimates, coral reefs would revel in similarly declines within the coming many years as sea temperatures arose.
- However, the will increase in international coral cover among 2002 and 2009 and in 2019 presented desire.
- It showed that coral reefs globally remained resilient and could recover if conditions permitted.
- For instance, coral reefs in East Asia, which has 30 per cent of the world's coral reefs, had more coral on average in 2019 than they did in 1983.
- This, despite the area being affected by large-scale coral bleaching events during the last decade.
- **About Coral Reefs** – Coral reefs are one of the most biologically diverse marine ecosystems on the Earth. Coral reefs play an important position in marine ecosystems and support the habitats of plant life and fauna within the sea.
- They are the underwater structures that are formed of coral polyps that

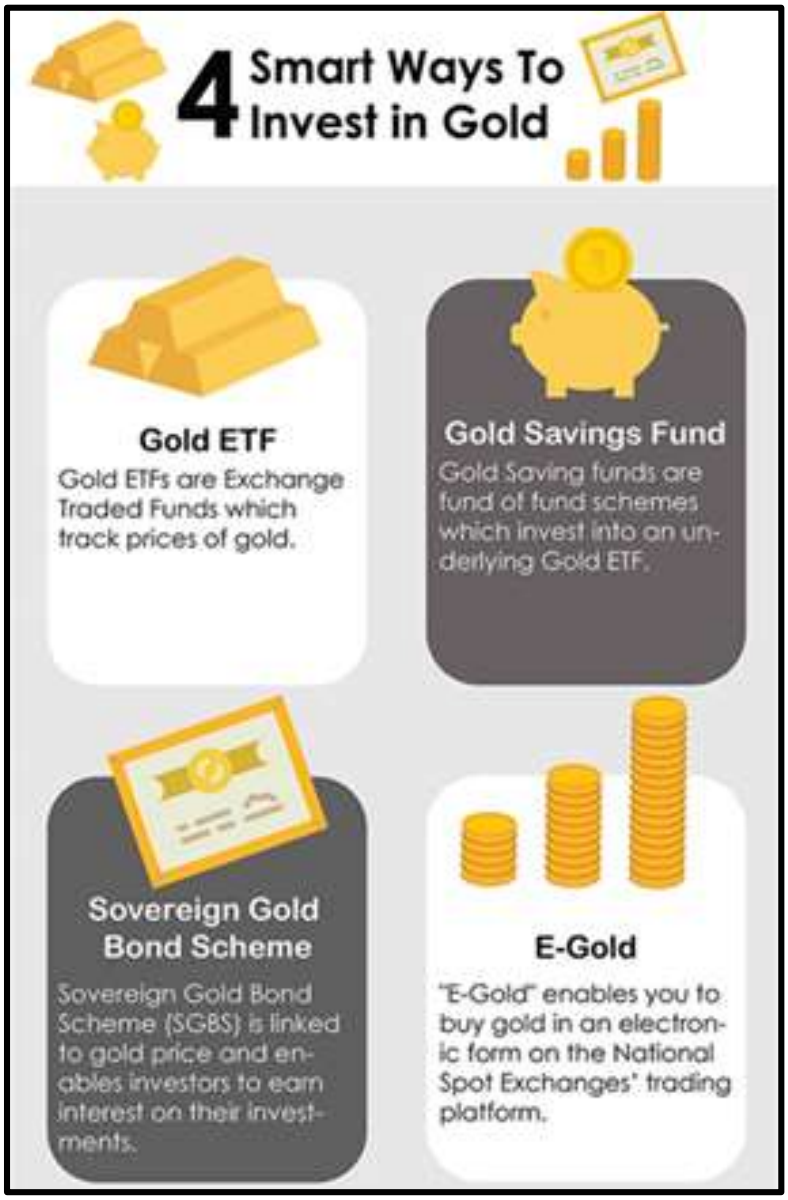
are held together by calcium carbonate.

- Coral reefs are also appeared because the tropical rainforest of the ocean and occupy simply zero.1% of the ocean's floor however are home to twenty-five% of marine species.
- They are normally determined in shallow regions at a depth less than 150 ft.
- However, some coral reefs extend even deeper, up to about 450 feet. Coral polyps are the character corals which are observed at the calcium carbonate exoskeletons of their ancestors.
- Corals may be found in all of the oceans but the biggest coral reefs are often determined within the clear, shallow waters of the tropics and subtropics.
- The largest of those coral reef structures, The Great Barrier Reef in Australia, the biggest coral reef is more than 1,500 miles long. Coral Reefs in India – Coral reefs are present within the areas of Gulf of Kutch, Gulf of Mannar, Andaman & Nicobar, Lakshadweep Islands, and Malvan.
- **Largest Coral Reef Area:** Indonesia has the largest coral reef area in the world. India, Maldives, Sri Lanka and Chagos have the maximum coral reefs in South Asia.
- Great Barrier Reef of the Queensland coast of Australia is the largest aggregation of coral reefs.
- **Major threats for the corals Natural:** Environmental-Temperature, Sediment Deposition, Salinity, pH, etc
- **Anthropogenic:** Mining, Bottom Fishing, Tourism, pollution, etc.
- Types of Coral Reefs Coral Bleaching – The coral and the zooxanthellae share a symbiotic relationship and 90% of the nutrients that are produced by the algae are transferred to the coral hosts.

- But this dating receives affected beneath excessive environmental stress which reasons the loss of symbiotic algae (zooxanthellae).
- As a result, the white calcium-carbonate exoskeleton is visible through its obvious tissue main to a condition known as Coral Bleaching.
- The corals become vulnerable in the absence of the algae and start to die if the temperature of the sea remains excessive for weeks.

Topic 32. GOLD EXCHANGE-TRADED FUNDS (ETFS)

Importance for Prelims: Economy



Investors turn positive for Gold ETFs in Aug on positive global outlook.

- A gold change-traded fund (Gold ETF) is a passive investment fund that objectives to music the charge of physical gold.
- Each unit of a gold ETF represents one gram of gold as the fund invests in physical gold and investors get the units in dematerialised form.
- Since it's an ETF, the units are listed on stock exchanges and investors can buy or sell units on the exchange platform like any equity instrument.

- Simply put, gold ETF is like buying gold in an electronic form.
- Hence, while selling a gold ETF unit, an investor will not get physical gold but the cash equivalent.
- The price of funding in gold ETFs is generally less expensive than that of investing in gold in bodily form.
- Gold ETFs back their assets by buying actual physical gold of 99.5% purity.
- This physical gold is stored in vaults with the custodian bank and valued periodically, according to the Securities and Exchange Board of India (SEBI) guidelines.
- Benefits of a gold ETF – First, one gets to invest in gold without worrying about factors such as purity of gold, transparency of pricing, making charges, lockers and theft, among other things. Second, one can purchase as little as one unit — representing one gram — at a time and still have the flexibility of buying more units depending on liquidity and prevailing gold prices.
- Since it's an ETF, it's a liquid investment and can be sold at any time on the exchanges.
- Also, some mutual funds provide the option of giving physical gold at the time of redeeming but it is subject to certain conditions.
- It also offers many blessings in terms of tax, as profits earned is dealt with as long term capital gain and there's no different levy which includes wealth tax.
- How to invest in gold ETFs To invest in gold ETFs, you need two main things: Choose a gold ETF product/fund manager: Gold ETF products are offered by several banks and private financial institutions.
- Once you select a product, your ETF fund supervisor will act as your stock dealer at the NSE and purchase and sell the gold instead of you.

- This process is just like trading in stocks and shares.
- **Open a demat account:** Since gold ETF is a security that is bought and sold in electronic, dematerialised form and not in physical form, you need to have a demat account to trade in them.
- You can open a demat account through your stock broker or the ETF fund manager you have selected.
- **Features of gold ETFs Transparency:** Similar to stocks and shares, gold fees at the inventory alternate are available publicly.
- You can know the value of your portfolio by checking the prices of gold for the day or hour.
- **Easy to trade:** The minimal package or lot that you need to buy to start buying and selling in ETFs is 1 unit. I.E. 1 gram of gold.
- You should purchase and sell the devices thru your stock broking or ETF fund supervisor on a daily or maybe hourly basis, just like equities.
- **Cost-effective:** If you spend money on a gold ETF listed on the stock exchange, there may be no access or exit load – a kind of price this is to be paid to shop for or sell units.
- The brokerage charges are very low – zero.5 percentage to one percent.
- **Lower risk:** Fluctuations in gold prices are generally not as high as in equities.
- This method that even if your returns on equities pass down, gold ETFs ought to act as your safety net.
- It will prevent you from incurring large losses.
- **Tax benefits:** While gold ETFs attract long-time period capital gains tax after 12 months, you do not need to pay VAT, Wealth Tax or Securities Transaction Tax on them.
- Are gold ETFs popular According to the Association of Mutual Funds in India, there are 12 gold ETFs in the market.

- These funds had assets under management totalling more than ₹5,600 crore as on September 2019.
- **Risks in gold ETF investments Price fluctuations:** Just like in any equity product, the Net Asset Value (NAV) of the units issued under a gold ETF can rise or fall according to economic fluctuations.
- **Less total returns:** The extra prices – brokerage, fee or fund control costs – to maintain a gold ETF should deliver down its general returns in evaluation with sale
- Gold ETFs Vs Sovereign Gold Bonds Total returns on investment through gold ETFs is lower than actual return on gold whereas it is higher than actual return on gold In case of Sovereign Gold Bonds (because of the hobby paid at the bond at some stage in retaining duration).
- Unlike Sovereign Gold Bonds, gold ETFs can't be used as collateral for loan.

Topic 33. MYRISTICA SWAMPS

Importance for Prelims: Environment

Myristica swamps exist as isolated pockets

- Myristica swamps — tree ¬covered wetlands within the evergreen forests of the Western Ghats that when formed a huge hydrological community all alongside the Western Ghats — now exist as small, isolated pockets, stated a brand new observe.
- Myristica swamps are one of the most threatened ecosystems in India due to increased human pressure.
- According to the researchers, inspite of their little-recognised biota, the swamps harbour several rarerelic floristic and faunal taxa comprising many endemic and threatened species, with most plant species noticeably restricted in their distribution.
- These swamps are one of the most unique and primeval ecosystems of the Western Ghats.
- Critical inland swamp habitats of India are the Myristica swamps, the Elaeocarpus swamps and the Hadlus, all of which are forested wetland ecosystems that are invariably freshwater in character.
- Myristica swamps have the characteristic tendencies of a dense evergreen closed wooded area, presence of considerable knee roots protruding from

waterlogged soil, soils with excessive humus content material, and are wet or inundated throughout the year.

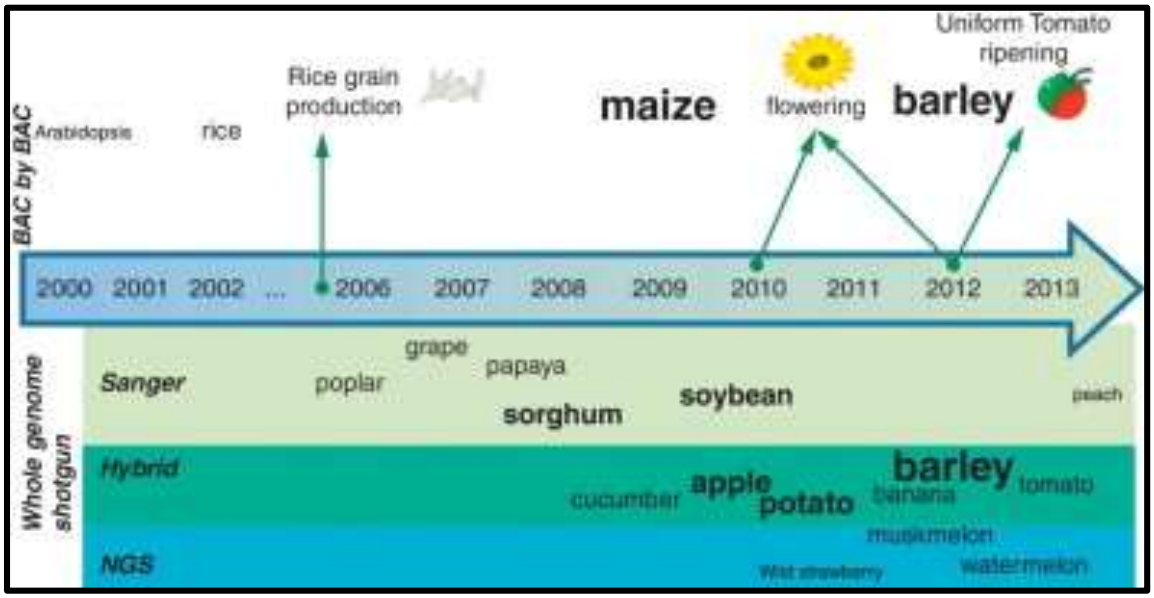
- The ancient swamp forests are endemic to the Western Ghats and a The historic swamp forests are endemic to the Western Ghats and a smaller distribution exists inside the Andaman and Nicobar Islands.
- There are 60¬odd swamps reported from Kerala and there may be many smaller ones, which are either not mapped or reported.
- An strive has been made to map the swamps in Karnataka and a few research have focused on swamps in Goa and Sindhudurga, the northernmost limit of swamps in Maharashtra.
- In current years, many Myristica swamps in the vital and southern Western Ghats are threatened by way of the growing agricultural call for and are regularly converted to paddy fields, or areca nut and teak plantations.
- This is especially actual of those swamps existing outdoor included forest tracts in the Western Ghats landscape.
- While wetlands have been given prioritisation in the past, swamps in India have been relatively ignored by scientists and policymakers.
- Myristica swamps, just like the floral plateaus of the northern Western Ghats and the Shola grassland mosaics, face a higher danger of destruction than other evergreen woodland types.
- The Biodiversity Act of 2002 pronounces vital biodiversity areas, including Myristica swamps, as Biodiversity Heritage Sites.
- many swamps are in reserve forests or sacred groves/community conservation landscapes, which do not grant them safety from land-use conversion, and also are extraordinarily fragmented and isolated.
- As of February 2021, 58 clinical research had been carried out at the floristic components and plant life of Myristica swamp forests and in line

with them, there are at least seventy-nine tree species, 26 shrubs, 27 climbers, and forty four herb species recorded.

- Any loss of the swamps will even result in the extinction of associated species.

Topic 34. GENOME SEQUENCING OF PLANT VARIETIES

Importance for Prelims: Science and Tech



IISER is sequencing the genomes of medicinal plants to know how they heal.

- For a few years now, researchers have been sequencing the genomes of plant types to better recognize their trends.
- According to an examination, there are approximately 391,000 land plants and 8,000 algal species inside the globe.
- Barely a thousand have been genome-sequenced. Now a team at the Indian Institute of Science Engineering Research (IISER), Bhopal, has been mapping the genomes of medicinal plants found in India, such as ginger, turmeric, aloe vera and giloy.
- Plants have multiple medicinal homes due to the presence of 'secondary metabolites'.
- Metabolites are small molecules and the intermediate merchandise of metabolism that play essential roles in dwelling organisms.
- Plant secondary metabolites are compounds of diverse structures and serve as defence against bacteria, fungi, amoebae, plants, insects, and herbivorous animals; as agents of symbiosis between microbes and

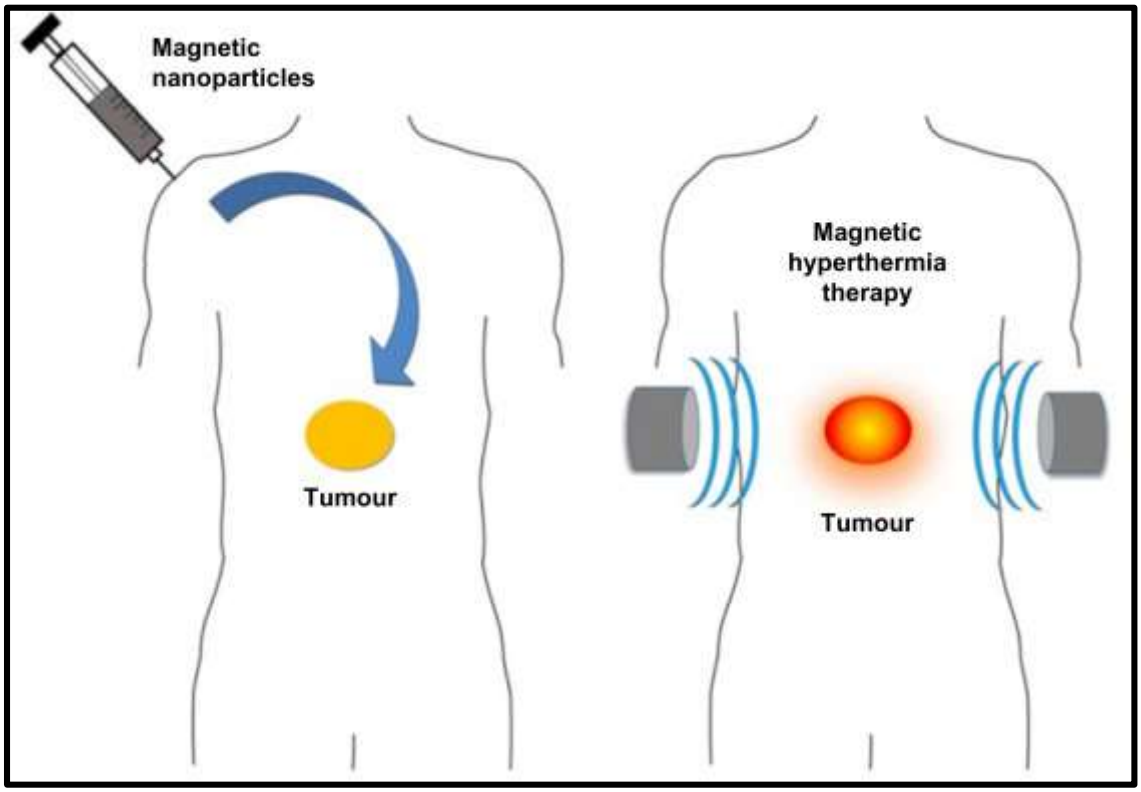
plants, Nematodes, bugs, and higher animals; and as pollinators.

- They also are used within the signaling pathways.
- Thus, metabolites are useful fuels, medicines, cosmetics, food supplements, compounds and find a range of applications in agriculture, ecology, and healthcare.
- There have been numerous researches based on the pathways and chemical structures of metabolites.
- Understanding the genome sequence can lead to producing more of the useful metabolites.
- The studies is huge as it facilitates scientists recognize which genes are chargeable for which metabolites.
- The unavailability of genome sequence hindered the study of the genomic basis of the medicinal residences of flora.
- Thus, the genome collection of giloy could be a step forward as a capacity future healing agent for illnesses like Covid.
- Giloy's anti-microbial activity is used in skin diseases, urinary tract infection, and dental plaque, among others.
- It is also found to reduce the clinical symptoms in HIVpositive patients; and its antioxidant activity has anti-cancer and chemo-protective properties.
- Giloy extracts are found to be potential applicants in treating numerous cancers like mind tumour, breast most cancers, and oral cancer, as properly.
- The availability of giloy genome will assist link its genomic and medicinal properties.
- A compound from giloy was reported to goal the two proteases (enzymes that ruin down proteins and peptides) — Mpro and spike— of the SARS-CoV-2 virus.

- Treatment with Gilroy extract modulates the numerous pathways of the immune machine for stepped forward immunity.

Topic 35. MAGNETIC HYPERTHERMIA

Importance for Prelims: Science and Tech



Hot magnets that kill cancer cells while sparing healthy ones.

- Magnetic hyperthermia — generating warmness in magnetic nanoparticles by using applying alternating magnetic fields on them — has been an area of studies in cancer remedy for the reason that 1990s.
- The goal is to burn away most cancers cells.
- Conventional remedies which include chemotherapy do this, however they also kill adjacent healthful cells, with excessive side effects.
- Magnetocaloric materials — warmth up when internal a magnetic discipline and cool when pulled out.
- The use of magnets in cancer remedy — 'magnetic hyperthermia' — has been explored earlier via scientific trials in China, Europe, and the United States.
- In traditional magnetic hyperthermia, magnetic nanoparticles are

subjected to alternating magnetic fields (of some gausses), which produces heat due to magnetic rest losses.

- Usually, the temperature required to kill tumor cells is 40-46 degree C.
- However, the downside right here is the shortage of temperature manipulate, which may also harm wholesome cells and motive aspect outcomes like improved blood strain.
- Magneto caloric materials, on the other hand, provide controlled and self-regulated heating.
- Moreover, they calm down as soon as the magnetic discipline is removed, not like the magnetic nanoparticles, which stay overheated even after the elimination of the magnetic subject.
- 'Curie temperature' – the point at which magnetic materials undergo a change in their magnetic properties.
- The minimum temperature required for cancer therapy is 42°C.

Topic 36. KIVI KUAKA PROJECT

Importance for Prelims: Environment

Birds which hear the infra-sounds of storms, tsunamis, lightning, and so on serve as alarms when tagged.

- The Kivi Kuaka challenge, led through French ornithologist Frederic Jiguet, desires to use migratory birds to warn of an forthcoming tsunami in the Pacific.
- Jiguet has fit 56 birds of five species with sophisticated animal tracking tags.
- These tags send data to the International Space Station, which relays them back to Earth.
- The project taps into the ability of birds to hear the low-frequency infra-sounds that humans can't hear.
- Each event — storms, tsunamis, lightning, aeroplanes and so on — emits its own distinct infra-sounds.
- In the case of tsunamis, these sounds travel much faster than the tsunami itself, and the birds pick them up early.

Topic 37. LIGHT COMBAT AIRCRAFT (LCA) MK2

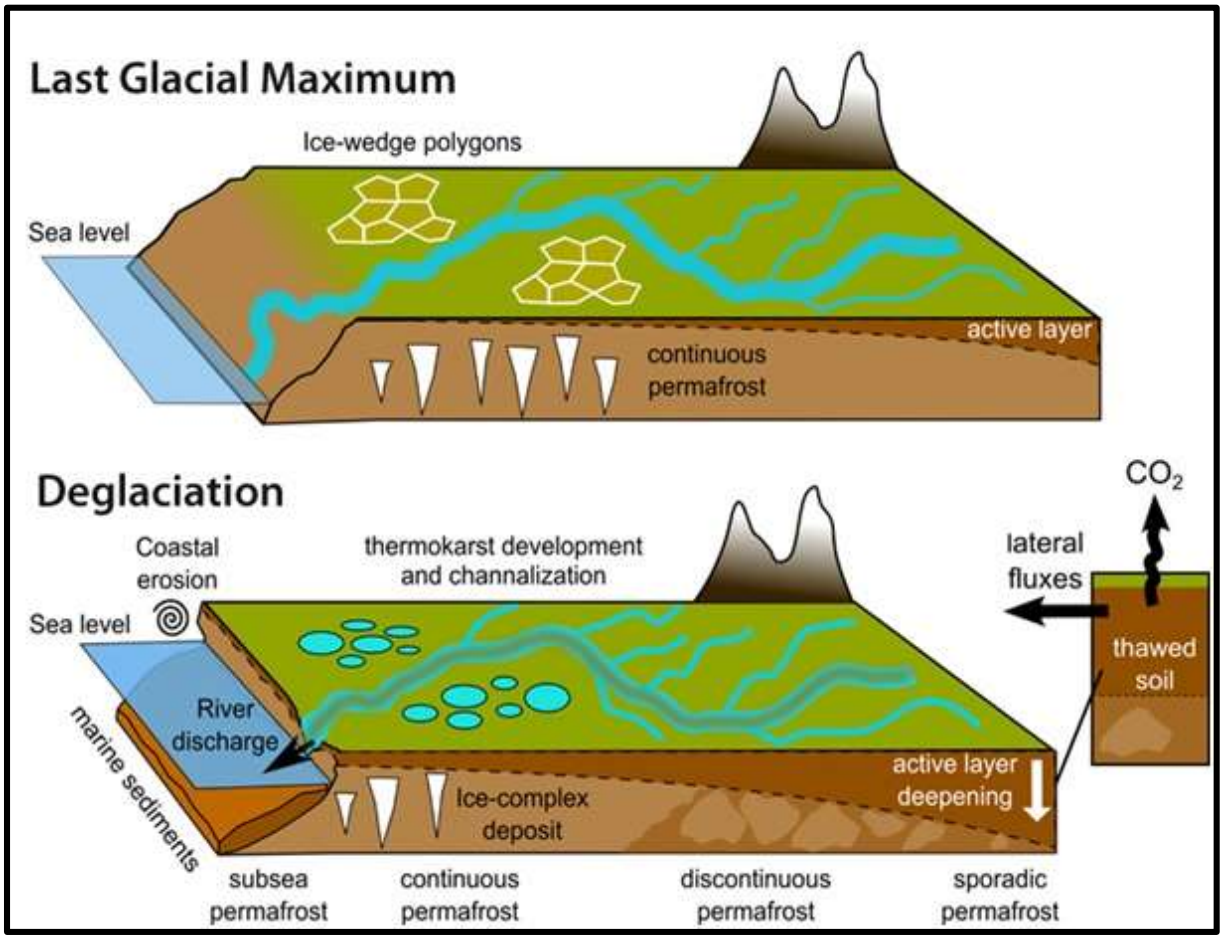
Importance for Prelims: Security

LCA Mk2 to roll out next year Concept – Roll-out of the aircraft (Mk2) is planned next year and the first flight in early 2023.

- The aircraft features enhanced range and endurance including an on-board oxygen generation system, which is being integrated for the first time Heavy guns of the elegance of Scalp, Crystal Maze and Spice¬2000 may also be integrated at the Mk2.
- The LCA-Mk2 could be a heavier and lots greater successful aircraft than the modern LCA variations.
- The Mk2 is 1,350 mm longer featuring canards and can carry a payload of 6,500 kg compared to 3,500 kg the LCA can carry To know more about LCA-Tejas, please click here.

Topic 38. THAWING PERMAFROST

Importance for Prelims: Environment



Thawing permafrost cause another pandemic

- The today's IPCC report has warned that growing worldwide warming will bring about reductions in Arctic permafrost and the thawing of the floor is anticipated to release greenhouse gases like methane and carbon dioxide.
- Defined as floor (soil, rock and any included ice or organic fabric) that stays at or beneath 0 diploma Celsius for at the least consecutive years, permafrost is spread across an area of over 23 million square kilometers, covering about 15% of the land area of the globe.
- These permanently frozen grounds are maximum not unusual in areas with high mountains and in Earth's higher latitudes—near the North and

South Poles.

- Permafrost covers big areas of the Earth.
- Almost 1 / 4 of the land area inside the Northern Hemisphere has permafrost below. Although the ground is frozen, permafrost regions are not always covered in snow.
- Permafrost is composed of rock, sediments, sand, dead plant and animal matter, soil, and varying degrees of ice and is believed to have formed during glacial periods dating several millennia.
- Its thickness reduces steadily closer to the south and is tormented by a number of different factors, such as the Earth's indoors heat, snow and plants cowl, presence of water bodies, and topography.
- Immediate outcomes as permafrost melts because of growing international temperatures – The first affects which might be very rapid will affect nations in which roads or homes have been constructed on permafrost.
- The Russian railways are an example.
- But the biggest worldwide problem is to do with the capability for organic material, which is now entombed and frozen within the ground.
- If the ground begins to thaw, this material will become available for microbiota to break down.
- In a few environments, the biota will release carbon dioxide, and in others launch methane which is set 25 to 30 times more potent as a greenhouse gasoline than carbon dioxide.
- The total quantity of carbon that is now buried in the permafrost is estimated at about 1500 billion tonnes and the top three meters of the ground has about 1000 billion tonnes.
- The world currently emits into the atmosphere, approximately 10 billion tonnes of carbon a year. So, if the permafrost thaws and releases even

only one in step with cent of the frozen carbon in anyone yr, it may nullify whatever that we do about industrial emissions.

- Usually, after a forest fireplace, you count on the woodland to develop back within the next 50 years to 60 years.
- This restores the carbon stock within the surroundings. But within the tundra, the peat is wherein the organic fabric is and this takes a completely long time to build up.
- So if we burn peat and launch it into the atmosphere, then it's going to take centuries to repair that carbon stock at floor level.

Can thawing permafrost can release new bacteria or viruses?

- Permafrost has many secrets and techniques. Recently mammoths were discovered inside the permafrost in Russia.
- And a number of those huge carcasses when they start to degrade once more can also reveal microorganism that had been frozen lots of years in the past.
- When the permafrost became shaped thousands of years ago, there weren't many people who lived in that area which changed into necessarily very cold.
- The range of diseases that you may locate in India is a good deal more than the number of sicknesses you locate in Greenland.
- The surroundings now could be a lot greater suitable than at some stage in the Ice Age for not simply human life, however additionally the evolution or development of viruses and bacteria.

Topic 39. SOFTWARE AS A SERVICE (SAAS)

Importance for Prelims: Science and Tech

Recently there was news that Freshworks — a Chennai- and Silicon Valleybased Software as a Service (SaaS) provider has filed for IPO in the US.

- SaaS is a way of delivering software applications over the internet when a customer requires them.
- Earlier, companies would have to install software in their clients' localised hardware for them to use their applications.
- So, this required clients to pay for use of the software program in advance, and additionally for the hardware on which the software program might run.
- SaaS, which started as a idea all through the dotcom boom, began to flourish as a business model after the monetary disaster of 2007 as corporations looked to store fees.
- At a personal level, the Microsoft Office 365 suite of products is a good example of SaaS.

- Instead of purchasing multiple one-time licenses at a hefty fee, users can opt for a more cheap monthly subscription of the whole suite primarily based on requirements.
- Users can also make do with primary hardware while saving facts at the cloud.
- One can view SaaS as a subset of cloud computing.
- Cloud or cloud computing is a broader idea that involves now not simply delivering software over the internet, but also presenting computing and facts garage services from a one-of-a-kind area (owned or third party).

Why is it important?

- The largest benefit that SaaS permits is innovation.
- It has basically converted fixed costs of companies into variable costs.
- When capital is scarce, the SaaS model frees up capital for more high priority requirements.
- The payment model for SaaS is typically a per seat, per month charge based on usage.
- This ensures extra green allocation of capital, specially for early-degree groups.
- This also implies that the threat for established companies is higher today.
- If they are not alert, it's just a matter of time before SaaS-using start-up will outwit them.

Topic 40. INPUT TAX CREDIT AND INVERTED TAX STRUCTURE IN GST

Importance for Prelims: Economy

Inverted duty refund only for inputs, not input services: SC

- The Supreme Court held that inverted duty refund is admissible only with respect to inputs and not for input services.
- A fundamental feature of GST is the free flow of input credit from the manufacturer to the consumer.
- Input Tax Credit is a mechanism to avoid cascading of tax (tax on tax).
- For example, on the time of paying the tax on output, possible reduce the tax they have got already paid on the inputs.
- **Exceptions:** A business under composition scheme cannot avail of input tax credit.
- ITC can't be claimed for private use or for items that are exempt. Inverted duty structure approach higher taxes on input and decrease tax on output or final product. In easy terms, companies face higher GST rates on uncooked substances than on finished merchandise.
- The GST Council has addressed the issue of inverted duty structure for many industries, however it still persists for footwear, textiles, pharmaceuticals and fertilizers.
- Refund of the unutilized ITC below the inverted responsibility structure of GST has been an extended-pending problem for agencies because of higher levies on raw materials in comparison to the completed goods. Rule 89(5) of the CGST Rules affords for the computation of the refund of ITC due to an inverted responsibility shape.
- Section 54(3) of CGST Act prescribes refund of unutilized enter tax credit based totally on a system supplied in rule 89(five) of CGST Rules.
- The revised formulation has excluded input services from the scope of

'internet enter tax credit score' for computation of refund.

- This rule become amended on April 18, 2018, with potential impact, to ensure that refund of unutilised ITC can best be availed on input goods and now not on enter service

Topic 41. BASMATI RICE

Importance for Prelims: Agriculture

1121 Basmati Rice Specification	
Moisture Content:	13% Max
Average Grain Length	8.00 MM to
Polishing Grade	Double/Silky Polished
Broken Grains	2% Max
Chalky Grains:	3% Max
Foreign Grains:	0.2% Max
Foreign Matter	0.1% Max
Paddy Grain:	0.2 % Max
Under-milled & Red-striped	2% Max

India may get exclusive rights to sell Basmati in EU

- It is one of the best known varieties of rice all across the globe.
- It is lengthy grain rice which has its beginning from India and a few elements of Pakistan.
- Basmati rice has a unique fragrance and flavour caused due to the presence of a chemical called 2-acetyl-1-pyrroline.
- This chemical is discovered in basmati rice at about 90 elements consistent with million (ppm) that's 12 instances more than non-basmati rice varieties.
- Basmati rice wishes precise climatic conditions to develop that is why it is cultivated in selected regions of India.
- Basmati vs Non-Basmati Rice Basmati is long grain The non-basmati rice comes in all different shapes and sizes – long, slender, short and thick, bead and round.
- Basmati has a characteristic fragrance and flavor whilst non-basmati types, do no longer have an aroma. Basmati is likewise available in white

and brown versions depending on the quantity of the milling process.

- Like wine and cheese, the older basmati gets the better its flavor and aroma.
- Hence the aged Basmati costs higher than the recent productions. Basmati rice becomes almost double its size on cooking.
- Such a significant increase in size cannot be seen in non-basmati varieties.
- This makes basmati variety one of the highly demanded rice in the world.
- Yield of Basmati rice from the agricultural land is almost half the non-basmati varieties.
- This is also one of the reasons for Basmati's higher costs. Production of Basmati Rice in India India is the largest producer of Basmati rice with about 70 per cent share in global production. Basmati rice constitutes certainly one of India's widespread exports each in terms of soft electricity and tough money.
- It is cultivated in the states of Himachal Pradesh, Punjab, Haryana, Delhi, Uttarakhand, Madhya Pradesh, Jammu and Kashmir and western Uttar Pradesh.
- In May 2010, GI status was given to basmati grown only in Punjab, Haryana, Delhi, Himachal Pradesh, Uttarakhand and parts of western Uttar Pradesh and Jammu & Kashmir. Major chew of India's basmati rice is exported to Gulf countries viz. Saudi Arabia, Iran, United Arab Emirates, Iraq and Kuwait.
- **In News –** India will likely walk away with the sole right to the Geographical Indication (GI) tag for Basmati rice in the European Union (EU) after the deadline For settling the issue with Pakistan expired on September 10
- It will give New Delhi exclusive rights to market the fragrant rice in the

EU as "Basmati" rice and deter other countries, mainly Pakistan, from selling the food grain as "Basmati".

- Pakistan opposed giving exclusive rights to India, contending that its farmers are also growing the variety.
- The Rice Exporters Association of Pakistan filed its objection to giving exclusive rights to India for selling Basmati in the EU.
- GI Tag It is an insignia on products having a unique geographical origin and evolution over centuries with regard to its special quality or reputed attributes.
- It is a mark of authenticity and ensures that registered authorized users or at least those residing inside the geographic territory are allowed to use the popular product names.
- GI tag in India is governed by Geographical Indications of Goods (Registration & Protection) Act, 1999.
- It is issued by the Geographical Indications Registry (Chennai). Benefits of GI Tag It provides legal protection to Indian Geographical Indications thus preventing unauthorized use of the registered GIs by others.
- It promotes financial prosperity of manufacturers of goods produced in a geographical territory.
- The GI protection in India leads to popularity of the product in other countries for that reason boosting exports.

Topic 42. SURYAMITRA SKILL DEVELOPMENT PROGRAMME

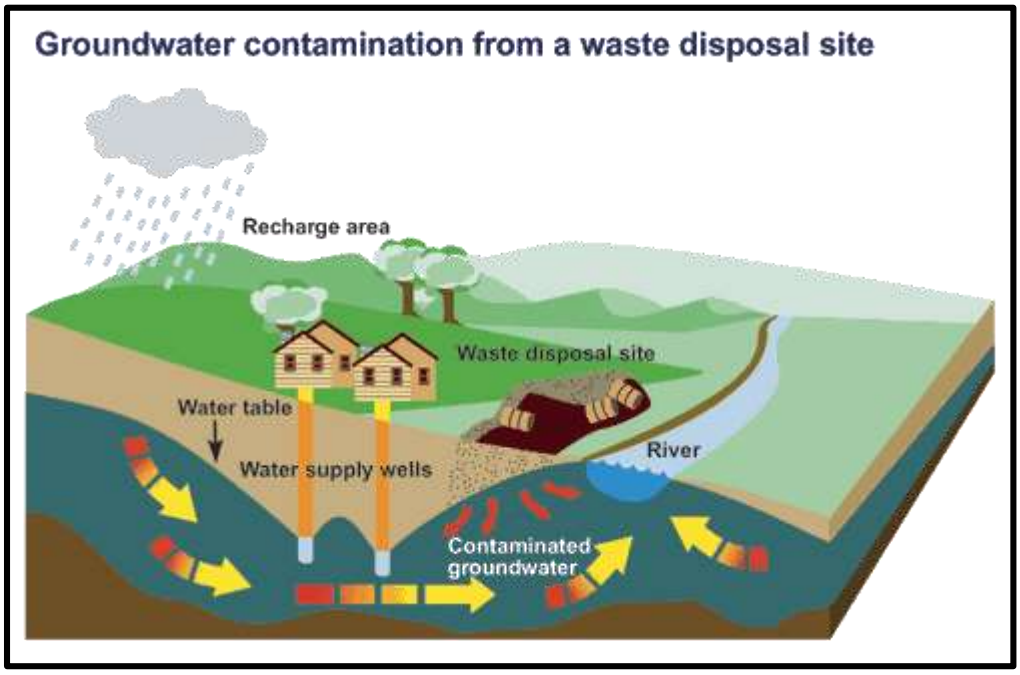
Importance for Prelims: Government Schemes and Programs

Vice President urges States to promote PV cells, solar module making

- The National Institute of Solar Energy (NISE), an autonomous institution of Ministry of New and Renewable Energy (MNRE), is the apex National R&D institution in the field of Solar Energy.
- NISE is organizing "Suryamitra" skill development programmes in collaboration with State Nodal Agencies, at various locations across the country.
- The programme ambitions to expand the capabilities of youth, considering the opportunities for employment inside the developing Solar Energy Power challenge's installation, operation & upkeep in India and overseas.
- The Suryamitra Programme is also designed to prepare the candidates to become new entrepreneurs in Solar Energy sector.
- The Suryamitra Skill Development Programmes are sponsored by Ministry of New & Renewable Energy, Government of India.
- Essential qualification – The candidate should be 10th pass and ITI in Electrician /Wireman/Electronics Mechanic/Fitter/ Sheet Metal, not below 18 years.
- **Preferable Qualification:** The candidates with Diploma in Electrical, Mechanical and Electronics branches will be preferred.
- Candidates with electrician certificate and experience shall also be preferred.
- The Engineering Graduates and persons with other higher qualification are not eligible to apply.

Topic 43. GROUNDWATER CONTAMINATION

Importance for Prelims: Environment



Not just groundwater, flouride has poisoned agricultural soil, crops in Bengal.

- West Bengal has been grappling with groundwater contamination for decades.
- About 12 per cent of the population in eight of the state's 23 districts is impacted by water contaminated by fluoride.
- Groundwater in Purulia and Bankura is already known to be fluoride-contaminated, as it crosses the proper restriction of one.Five milligram according to litres of attention as in keeping with the World Health Organization requirements.
- The take a look at investigated the magnitude of fluoride infection in agricultural land soil and meals vegetation in these two districts in addition to its negative impact on the health of locals.
- The concentration of fluoride in groundwater above the permissible level is, therefore, a factor that contributes to the accumulation of fluoride in agricultural soil and crops, the study stated.

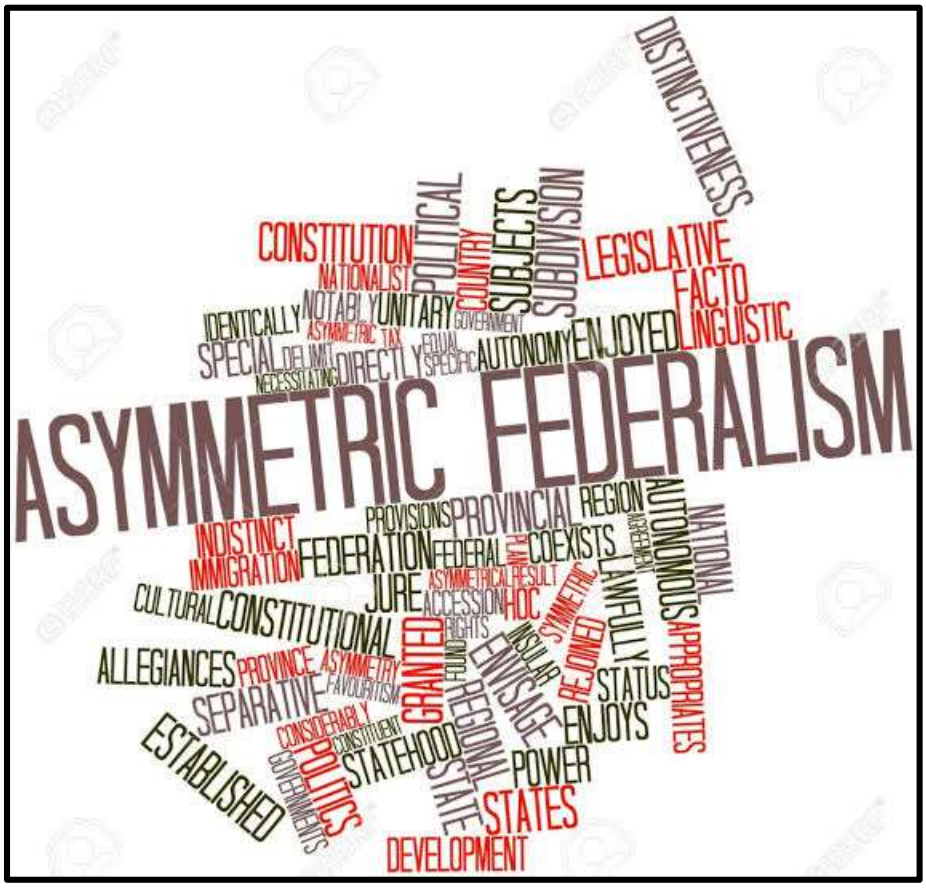
- There are three stages to fluoride toxicity: "First, the groundwater used for agricultural purposes deposits a good amount of fluoride in the soil. Then this fluoride is absorbed by way of plants, and it enters the food chain machine, causing harm to the human body."
- The examine located that the buildup of fluoride was better in leafy and non-leafy greens than in pulses and cereals from both districts.
- The maximum accumulation was found in onion, while being minimum in rice.
- It also found that children were the most vulnerable to fluoride contamination due to their low body weight.
- Fluoride Contamination Endemic skeletal fluorosis was reported from India in the 1930s, according to a WHO report.
- "It was observed first in bullocks in Andhra Pradesh.
- The bullocks could not walk, apparently due to painful and stiff joints," the WHO report stated.
- Fluoride is an important micronutrient and has each beneficial and unfavorable results on human health.
- However, publicity to high degrees of fluoride reasons dental fluorosis, skeletal fluorosis and non-skeletal fluorosis.
- Ligaments calcification, liver and kidney dysfunction, nerve weak point, developmental ailment, organ tissue harm, bending of legs, weak spot, anemia, despair, gastrointestinal troubles, lack of appetite, and brittle bone problems in youngsters are some of the generally visible fitness issues.
- It takes several years for skeletal fluorosis to show prominently.
- Children ordinarily be afflicted by dental fluorosis, a circumstance that is essentially irreversible.
- Severe skeletal and non-skeletal problems become greater distinguished

simplest after several years of continuous consumption of fluoride-contaminated food.

- It is the result of long-term exposure to a toxicant.
- But it does not purpose an acute effect, so it gets omitted often. Groundwater Ground water is the water that seeps through rocks and soil and is stored below the ground.

Topic 44. ASYMMETRIC FEDERALISM

Importance for Prelims: Polity



Manipur special status The term asymmetrical federalism refers to "differences in the status of legislative or executive powers assigned by the constitution to different regional units".

- It is a flexible type of union of states which allows the government to cut different deals with different states in special matters pertaining to them.
- This method allows the government to grant special status to some units providing them with special powers not enjoyed by other states.
- Asymmetry involves providing greater autonomy to some states when compared with others.
- It lets in particular states to have greater govt, legislative, and at times, judicial powers than different states.

Why asymmetric federalism?

- To address unique local, ancient and geographical contexts. Besides the Centre and the States, the country has Union Territories with a legislature, and Union Territories without a legislature.

How does it plays out in India?

Case Study 1:

- UTs Puducherry and Delhi have legislatures, while the other territories under the Centre do not have legislatures or a ministerial council to advise the administrator.
- Even between Puducherry and Delhi, there is a notable difference. Puducherry has legislative powers on any matter mentioned in the State List or the Concurrent List, insofar as it applies to the Union Territory.
- **Delhi, which has the same field, has three further exceptions:** police, land and public order are outside its purview.
- However, Parliament has overriding powers over any law made by the Assembly in the Union Territories. Puducherry has one more unique feature.
- Despite being a single administrative unit, the Union Territory is 'non-contiguous'.
- That is, its territory is not limited to one extent of land.
- Besides Puducherry and its adjoining areas, it has enclaves located within other States: Karaikal (within Tamil Nadu) Yanam (within Andhra Pradesh) and Mahe (within Kerala).

Case Study 2:

- Article 370 (Now amended) The important example of asymmetry among Centre-State ties changed into within the way J&K related to India till August 6, 2019, the day the President declared that its special status ceased to be operative.

- Under Article 370, the State changed into allowed to have its personal Constitution, its own definition of 'everlasting citizens, the right to bar outsiders from maintaining belongings, and the privilege of no longer having any Indian regulation routinely relevant to its territory.
- Indian legal guidelines had to be specifically authorized through its Assembly before it can perform there.
- It was allowed to have its own Penal and Criminal Procedure Codes.
- The President become empowered to inform, on occasion, the provisions of the Constitution that could be prolonged to the State, without or with modifications

Case Study 3:

- Article 371 The 'special provisions' applicable to a few other States are especially within the form of empowering the Governors to discharge some unique obligations
- These States are Maharashtra, Gujarat, Manipur, Nagaland, Sikkim and Arunachal Pradesh.
- The common characteristic is that anywhere Governors had been requested to discharge unique obligations, their discretionary power overrides the method of session with the respective Council of Ministers.
- Article 371 says the Governor of Maharashtra has a special obligation to establish separate development forums for Vidarbha, Marathwada, and the relaxation of the State, even as the Governor of Gujarat has a similar responsibility towards Saurashtra, Kutch and the rest of Gujarat.
- The responsibilities cover equitable allocation of funds for development expenditure, and providing facilities for technical education and vocational training.
- Article 371A confers special status on Nagaland. Under this provision, no law made through Parliament with regards to Naga normal law and

manner, together with civil and crook justice subjects, and possession or switch of land and sources will follow to Nagaland, until the Legislative Assembly of Nagaland comes to a decision so.

- The safety of Naga legal guidelines and customs changed into written into the Constitution following the July 1960 agreement between the Centre and the Naga People's Convention, under which the State was later created.
- Further, the Governor of Nagaland has a 'special responsibility' regarding law and order in the State.
- Article 371B contained a special provision for Assam under which a committee of legislators from the tribal areas was formed to look after their interest.
- The tribal areas later became Meghalaya State. Under Article 371C, the Hill Areas of Manipur ought to have a committee of legislators.
- The Governor has a unique duty to make an annual report to the President at the administration of the Hill Areas.
- The Centre is empowered to give guidelines to the State as far as these regions were involved.
- Article 371D is a detailed provision underneath which the President can skip an order to offer equitable opportunities and facilities to human beings belonging to distinct parts of Andhra Pradesh in public employment and education.
- In particular, the President can create local cadres in various training of employment and allot civil posts to detailed neighborhood cadres simplest.
- The President can specify any part of the State as a 'local area' for this purpose.
- To supply effect to this arrangement, an Administrative Tribunal has been

installation.

- No courtroom, apart from the Supreme Court, has any strength of superintendence over this tribunal.
- Article 371F incorporated special provisions after the addition of Sikkim to India.
- One primary objective changed into to furnish safety to current legal guidelines in Sikkim in order that they're not declared unconstitutional after being brought below the Constitution of India.
- Article 371G incorporates special provisions to maintain the non secular and social practices of Mizos in Mizoram and their commonplace law and process and administration of criminal and civil justice, besides ownership of land.
- Article 371H vests a special responsibility on the Governor of Arunachal Pradesh with respect to law and order.
- It makes clean that the Governor shall discharge this function after consulting the Council of Ministers, however exercising his person judgment as to the motion taken.

Case Study 4:

- Sixth Schedule There is another significant tier of administration under the larger framework of asymmetric federalism.
- The Sixth Schedule to the Constitution contains provisions for the administration of tribal areas in Assam, Meghalaya, Tripura and Mizoram.
- These create autonomous districts and autonomous regions. Any autonomous district with one of a kind Scheduled Tribes could be divided into autonomous areas.
- These will be administered by District Councils and Regional Councils.
- These Councils can make legal guidelines with respect to allotment,

occupation and use of land, control of forests aside from reserve forests and water publications.

- Besides they can regulate social customs, marriage and divorce and property issues.
- In Assam, the Karbi-Anglong Autonomous Council, Dima Hasao Autonomous District Council and the Bodoland Territorial Council have been set up under the Sixth Schedule.
- Another six self sustaining councils had been fashioned through Acts of the legislature.
- Ladakh has two autonomous hill improvement councils (Leh and Kargil). The Darjeeling Gorkha Hill Council is in West Bengal.

Topic 45. UNIFIED PAYMENTS INTERFACE (UPI)

Importance for Prelims: Economy

India, Singapore to link fast payment systems

- The Reserve Bank of India (RBI) and the Monetary Authority of Singapore (MAS) on Tuesday announced a project to link their respective fast payment systems — Unified Payments Interface (UPI) and Pay Now — to facilitate instant, low-cost, cross-border fund transfers.
- The linkage is targeted to be operationalized by July 2022. UPI is India's mobile-based, 'fast-payment' system that facilitates customers to make round-the-clock payments instantly using a virtual payment address created by the customer.
- Pay Now is the fast payment system of Singapore that enables peer-to-peer fund transfer service. About UPI – UPI is a real-time payment system that helps in instant and quick transfer of funds between two bank accounts.
- The transfer of funds is done through a single mobile application. Some of its important functions are – Immediate fund transfer which is faster

than NEFT.

- UPI is available for twenty-four hours It is likewise available on public holidays Every Bank gives its own UPI for exceptional cellular platforms like Android, IOS.
- It can be utilized for making payments to merchants, and utility bill payments.
- Any complaint can be raised from Mobile App directly. UPI is presently the largest a few of the NPCI operated structures which includes National Automated Clearing House (NACH), Immediate Payment Service (IMPS), Aadhaar enabled Payment System (AePS), Bharat Bill Payment System (BBPS), RuPay etc.
- The idea of UPI was developed by the National Payments Corporation of India (NPCI) and is controlled by the Reserve Bank of India (RBI) and IBA (Indian Bank Association).
- The UPI interface is based totally at the authentication of two factors.
- This is in line with the regulatory guidelines making it very safe.

Are BHIM and UPI the same?

- UPI is a platform whereas BHIM is a separate mobile wallet app like Paytm, PhonePe, etc.
- If a person has bank accounts with the different banks then the person will have to use different UPI apps and VPA (Virtual Payment Address).
- On the other hand, BHIM is a unified payment app based on UPI which can be synced to any of the UPI enabled bank accounts.
- The BHIM app is an upgraded version of existing bank UPI apps. The biggest benefit of BHIM apps over different fee apps is that transactions show up directly between bank money owed and no costs associated with the switch.
- Unlike other price apps, there is no need to recharge BHIM price apps.

- There are no commission or hidden charges National Payments Corporation of India (NPCI), an umbrella enterprise for working retail payments and settlement structures in India, is an initiative of Reserve Bank of India (RBI) and Indian Banks' Association (IBA) under the provisions of the Payment and Settlement Systems Act, 2007.
- It is a "Not for Profit" Company beneath the provisions of Section 25 of Companies Act 1956 (now Section 8 of Companies Act 2013), with an goal to offer infrastructure to the whole Banking gadget in India for physical in addition to digital fee and agreement structures.

Topic 46. LITHIUM RESERVES IN AFGHANISTAN

Importance for Prelims: IR

China's support to the new Taliban regime in Afghanistan has raised suspicions that Beijing is eyeing Kabul's mineral wealth, estimated at $1-3 trillion.

- According to a 2015 document by means of the Henry M Jackson School of International Studies at the University of Washington, Afghanistan has newly discovered mineral wealth that might raise its economic system over the following couple of decades by way of $1-3 trillion and hire lots of latest workers.
- A 2010 US study had shown that Afghanistan could have among the world's largest deposits of lithium.
- China is the top consumer of lithium, processing nearly 90 per cent of the total lithium hydroxide available globally.
- Chinese producers have invested significant volumes in lithium projects outside China this year.
- The Ganfeng Lithium organization is the various high-quality investors China has a lot better alternatives for overseas mineral extraction and is already the usage of them — as an instance Argentina, Chile, Zambia and Congo DRC.
- Lithium, a key steel in Electric Vehicles, is in the limelight as expenses have nearly doubled for the reason that begin of the 12 months.
- Lithium Reserves in India – India currently imports all its lithium needs.
- The domestic exploration push, which additionally consists of exploratory paintings to extract lithium from the brine pools of Rajasthan and Gujarat and the mica belts of Odisha and Chhattisgarh, comes at a time when India has stepped up its economic offensive against China, a main source of lithium-ion electricity storage merchandise being imported into the united states.

- The Marlagalla-Allapatna area, along the Nagamangala Schist Belt, which exposes mineralised complex pegmatites (igneous rocks), is seen as among the most promising geological domains for potential exploration for lithium and other rare metals.
- The lithium locate is comparatively small, thinking about the dimensions of the verified reserves in Bolivia (21 million tonnes), Argentina (17 million tonnes), Australia (6.3 million tonnes), and China (four.5 million tonnes). Lithium can be extracted in unique approaches, relying at the type of the deposit – it's miles generally carried out both via solar evaporation of huge brine swimming pools or by means of hardrock extraction of the ore.
- In India, along the rock mining at Mandya, there's some capacity for convalescing lithium from the brines of Sambhar and Pachpadra in Rajasthan, and Rann of Kachchh in Gujarat.
- The major mica belts in Rajasthan, Bihar, and Andhra Pradesh, and the pegmatite belts in Odisha and Chhattisgarh apart from Karnataka, are the other potential geological domains.

Topic 47. PUSA DECOMPOSER

Importance for Prelims: Agriculture

A year after first trying it, farmers warm up to Pusa decomposer, officials plan to ramp up use.

- Used to decompose paddy stubble after a harvest and prevent stubble burning, the decomposer turned into sprayed on round 30 acres of farmer Umesh Singh's farmland in Hiranki village last year.
- It can take about 20 to 22 days for stubble to decompose.
- The decomposer has also helped improve soil fertility and reduced the need for extensive ploughing to mix stubble with soil.
- By the time farmworkers arrive to sow the wheat, the land is free of stubble.
- The decomposer has reduced the need for fertilizer.
- The paddy is prepared for harvesting in a few fields, however there was no statistics from the authorities but on whether or not or not the decomposer may be made available.
- Indramani Mishra, head of the Agricultural Engineering Department at the Indian Agricultural Research Institute where the decomposer was developed, said it is likely to be used more extensively this year.
- It has been licensed to nine companies for production.