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Topic 1. MIGRATORY MONARCH BUTTERFLIES OFFICIALLY DECLARED 'ENDANGERED'

Important for subject: Environment



The monarch butterfly that migrates is a subspecies within the monarch butterfly, which travels for 4,000 miles across America every year, is classified endangered in the International Union for Conservation of Nature (IUCN) Red List of Threatened Species, July 21 2022.

- Monarchs, which are the most recognized butterflies, constitute essential pollinators, and offer a variety of ecosystem services like maintaining the food web of the world.
- **They live a unique life style:** They travel the length and wide of the American continent twice in the year, consuming nectar from various species of.
- However, they only breed in one specific plant - the milkweeds.
- The larvae of monarchs consume this species upon the day they hatch.
- The majority of these butterflies winter along the California coastline and in the forests of central Mexico.
- A smaller number of the species can also be found in places like Australia, Hawaii and India.
- The continent's population has decreased by 23-72 percent over the last 10 years.
- The western monarchs that reside to the west in the Rocky Mountains reduced 99.9 percent, reducing to 1,914 butterflies in 2021, from 10 million in the 80s.
- The eastern monarchs who move from the east United States and Canada -the larger group was also reduced by between 1996until 2014.
- **Causes of extinction Causes for extinction:** Deforestation-for urban development and agriculture Logging Habitats that are illegal and legal destruction- Removal of breeding grounds for farmers (milkweed).
- In the early 2000s glyphosate, a weedicide is widely employed on farms that killed a large portion part of the dairy weed Climate Change- making storms devastating

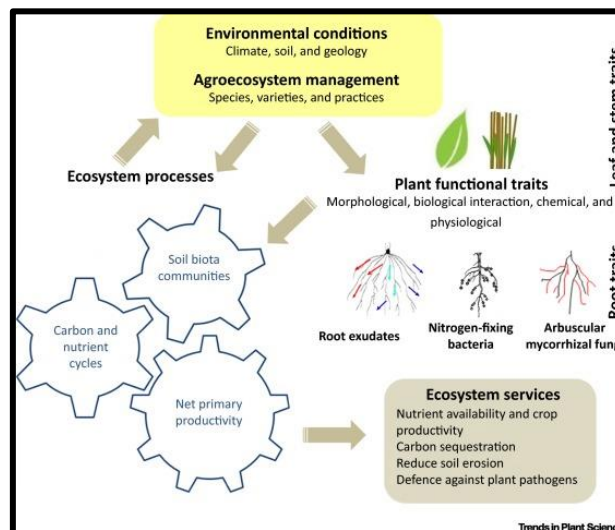
wildfires, droughts, and severe storms more frequent and disrupting the cycle of flowering.

What is a Red list?

- The organization was established in 1964. IUCN the Nature's Red List of Threatened Species transformed into the largest information source about the global status of extinction risk of fungus, animal and species of plants.
- The IUCN Red List is a vital indicator of the health of the planet's biodiversity.
- The IUCN Red List is used by various government agencies, wildlife departments, and conservation-related non-governmental organizations (NGOs).
- According to the report that the list contains, biodiversity is declining.
- There are currently more than 1, 47,500 species listed on the IUCN Red List, with more than 41,000 species at risk with extinction.
- This includes amphibians with 41 and 37 percent of sharks and rays and 34 percent of conifers and 33% of reef-building corals and 25% of mammals, and 13% of birds.

Topic 2. CLIMATE CHANGE ALTERS PLANTS' FUNCTIONAL TRAITS

Important for subject: Environment



"PhenObs" -- an open network that includes citizens, researchers and students who study botanist gardens throughout all of the Northern Hemisphere (studied 212 plant species in five botanical gardens across Germany) published the findings in New Phytologist on June 28.

- Phenology is the science of the growth, leafing, fruiting, flowering and the senescence (deterioration) different stages of the life of plants.

- Phenology is among the most important indicators to observe the impacts of the climate on the environment change.
- Scientists have assessed traits such as the height of plants, leaf area as well as nitrogen and carbon content, dry matter content, and the seed mass.
- Results of the Research Researchers have discovered that shorter plants are growing, forming leaves and performing other biological functions before their normal time.
- Are more likely to blooming, and require shorter time before reaching the height of flowering over taller plants.
- Over 85 percent of the plant species that are found in the temperate ecological systems are herbaceous.
- The leaf area played an important part in the display of useful traits.
- Large leaves of plants leafed out later.
- However, the decline due to the aging process and cell damage was more evident in species with longer leaves.
- They are also more prone to the effects of drought or changes in temperature.
- They have been observed to alter their time of flowering and fruiting and postpone it in order to beat the smaller species.
- However, the thicker and thinner leaves appear to be more resilient to drought stress and are less vulnerable to temperatures dropping.
- Senescence of the leaves can be caused by the summer heat or a drop in temperature in autumn.
- The initial stages of growth in a plant, and leaf unfolding at later stages were dependent on each the other.
- Based on the current Climate changes, plants species are seen to be advancing in their Phenology earlier in the year.
- This could have an effect on the characteristics of functional plants.
- This could impact competitive hierarchies -- an ordered order of rank between dominant and competitive subordinate species -- which has implications for the global biodiversity.

Topic 3. WHAT ARE TETRAPODS AND DID THEIR REMOVAL CAUSE 'UNUSUAL VIBRATIONS' ALONG MUMBAI'S MARINE DRIVE?

Important for subject: Environment



Two residents of two houses on Marine Drive, the iconic promenade stretching for 3 kilometers in the south of Mumbai reported 'unusual noises' in high tide during the weekend. The cause was removal of the tetrapod's an element of the Coastal Road Project.

What is a tetrapod?

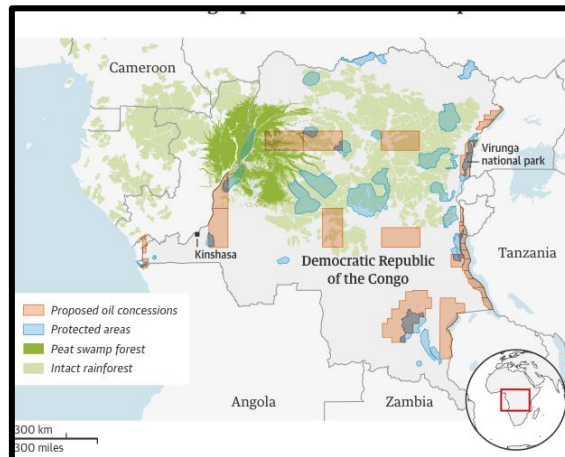
- Tetra pod, in Greek is a four-legged word.
- They are four-legged concrete structures which are erected on beaches to stop water damage and erosion.
- It was first utilized in France during the late 1940s to guard the shoreline from sea.
- They are usually joined to create an interlocking, but porous barrier that suffocates the power of waves as well as currents.
- They are massive structures, weighing anywhere from 10 tonnes.
- The interlocked tetra pods function as an obstacle that is in place against the rocks in the event of being smashed by waves.
- Tetrapod's, each of which weighed around 2.25 tonnes were positioned in Marine Drive in the late 1990s in order to break the waves, and to maintain the shoreline that was being reclaimed located in South Mumbai.

What is the reason why the tetrapod was eliminated from Marine Drive area?

- The sandbags were removed temporarily in order to complete reclamation work to support an currently ongoing Coastal Road Project (10.58 km of coastal road) that runs from Princess Street in Marine Drive until the Worli end of the Bandra Worli Sea link.
- There are over 6000 Tetrapod's along the Marine drive by itself.

Topic 4. STAY AWAY FROM CONGO'S 'CARBON BOMB' AUCTION, GREENPEACE URGES BIG OIL

Important for subject: Environment



Greenpeace has asked large oil and natural gas firms not to take part in an auction of oil blocks held in Democratic Republic of Congo at the close of July. Greenpeace has branded the auction the carbon bomb.

What is a carbon bomb?

- It's "an oil or gas project that will result in at least a billion tonnes of CO2 emissions over its lifetime."
- When coal, oil, and gas extraction is done, it can cause polluting and degradation of the environment.
- Additionally carbon emissions occur in large quantities when burning fuel.
- Around 195 of these initiatives have been identified the world across which includes India, the US, Russia, West Asia, Australia and India.
- As per the document they'll collectively surpass the emissions limit which was agreed upon under the Paris Agreement of 2015.

Why carbon bomb?

- These gas field are found in Congo Basin forest.
- The Cuvette Centrale region in Congo Basin is the most extensive natural tropical peatland.
- It is able to store three years of equivalent of greenhouse gas emissions from the world.

- The blocks of oil also border carbon-rich peatlands in west African country, an area that activists have described as "a carbon bomb".
- If the peatlands are disturbed, huge amounts of carbon dioxide may be released.

What is peatland?

- Peatlands are a kind of wetland that is found in nearly every country and comprise at least 3 percent of the global land surface.
- The term "peatland" refers to peat soil as well as the wetland habitats that are growing at the surface according in the International Union for the Conservation of Nature Peatlands are wetlands that are made up of organic matter that has been decomposed, partially submerged in layers of water that lacks oxygen.
- Their carbon content is high, which is what makes them vulnerable to burning when they are dewatered.

Topic 5. 'RIGHTS OF NATURE' IS A FAUX RIGHTS REVOLUTION ENTANGLED IN ANTHROPOCENTRISM

Important for subject: Environment

In three recent cases in three cases recently, the Madras along with three other high courts in the Uttarakhand high courts used parens patriae to grant rights to natural elements such as glaciers and rivers.

What is Parens patriae?

- Parens patriae views the nature in the form of a permanent minor which is a way of establishing the authority of the state that's inability to enforce laws in a timely manner caused ecological crisis.
- 19 April 2022 on April 19, 2022, the Madurai court of Madras high court is in A.
- Periyakaruppan (v. The Principal Secretary invoking the parens patriae jurisdiction and declared Mother Nature as a living being with all rights, obligations, and obligations that come with an actual person, with the responsibility to safeguard and protect the species.
- Parens patriae Latin meaning "parent of the nation".
- In law, it is the authority of the state to take action against a parent who is a bad one or guardian, and take responsibility for anyone who is that requires protection.

- The two decisions by the Uttarakhand high court declaring the rivers Ganga and Yamuna and Himalayan glaciers as legal entities as well as summarise the law of water rights for rivers throughout India.
- But, in light of issues with implementation and administration and challenges to implementation, it was decided that the Supreme Court stayed the implementation of both decisions.
- New Zealand achieved the representation of the legal persona that is the Whanganui River.
- Whanganui via the Office of the Whanganui River (TePouTupua) that comprises members of the Crown and Indigenous communities.

Topic 6. WHAT'S CAUSING MASS FISH DEATH IN INDIA'S PONDS AND LAKES?

Important for subject: Environment



Every year, numerous lakes and ponds in various Indian states are the sites of massive fish deaths. The main reason for this is the pollution of water, typically caused by human activities.

What has led to pollution of ponds and lakes in India?

- The rapid growth of India has resulted in about 70% of the surface water being unsafe for consumption. Additionally, massive contamination of water bodies has resulted in the death of a large number of the aquatic species.
- Waste and sewage dumping are the two main factors that cause water pollution and low levels of DO in the Indian lakes and ponds.
- Religious celebrations can cause water pollution.

- Chemicals that cause harm, such as microorganisms and chemicals can be found in the water of a river, stream or lake, Aquifer or different body of water reducing its quality and making the water toxic to human beings and the natural environment.
- The poisoning of heavy metals is usually a major reason for these events.
- Even if a tiny portion of these heavy metals are introduced into the waterway, their effect on the ecosystem can be amplified by processes such as bio magnification and bioaccumulation

How do we know if the water is polluted?

- The five most important water quality parameters include temperatures, dissolved oxygen electrical conductivity, pH, salinity and turbidity.
- **Dissolved oxygen:** It's the amount of oxygen dissolving in water, which is essential to the growth and survival of most aquatic species.
- This is an important indicator of the quality of water and the ability of the body of water to sustain ecosystems and aquatic life.
- **Temperature:** Temperature of water can affect water chemical properties and the functions of aquatic organisms, like metabolism rates of living organisms as well as the timing of reproduction migration, etc.
- **Conductivity:** This is the capacity of water's conductivity to carry electricity as a result of the dissolving salts in water, which break down into negatively and positively charged ions.
- **Salinity:** Salinity is measure of the quantity of salts in water.
- The dissolved salts can increase conductivity and salinity.
- **pH:** It is an indicator of how acidic or alkaline water is.
- Many chemical reactions essential for aquatic organisms to live and expand and thrive, require a narrow pH range.
- **Turbidity:** It's a measure of the quantity of suspended particles that are present in the water.
- Algae, suspended particles, as well as organic matter are all contributing to the turbidity.
- There is a high percentage of total coliform bacterium, F. coliform faeces and E. Coli suggests that the water source is contaminated by the faecal matter (e.g. the discharge of sewage that is not treated).

- They are also known as "indicator bacteria" because they are simpler to detect when compared with other pathogens.
- They could therefore determine the degree of contamination within the water body

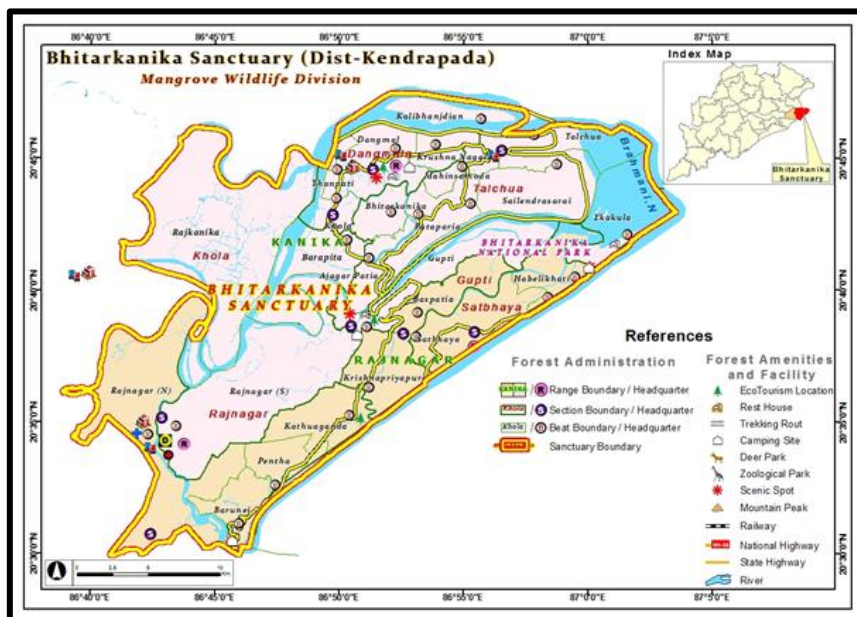
What are possible solutions to the water pollution?

- Localised and decentralised initiatives are typically the best way to carry out the various projects to restore lakes and ponds because they address particular issues that are specific to the particular water body at issue.
- Data collection, particularly by using automated, geotagged time-stamped sensors that collect data on water quality in a non-stationary way is one way to determine the extent of pollution in the local water supply.
- Policies, regulations and financing to develop wastewater treatment infrastructures, improving the management of solid waste and enforcing strict regulations to curb industrial pollution could result in a major and widespread changes in the quality of water.
- Promoting more sustainable farming practices that reduce the need for chemical inputs is a great way to tackle one of the major causes of pollution in water.
- The involvement of stakeholders and innovation are vital.
- Localised participative control of the water body is a way to increase efforts to restore water bodies starting from the bottom up.
- Eutrophication Nitrogen is essential to the growth of plants within the aquatic environment.
- However, when huge quantities of nitrogen enter an ecosystem (e.g. from runoff from fertilisers) this can lead to excessive growth of algae.
- In a process referred to as "eutrophication," the algae utilize oxygen to produce photosynthesis, thus depleting the oxygen supply for aquatic animals.
- This decreases the amount of oxygen dissolved in the water and could kill and suffocate the organisms in the. Bioaccumulation.
- It's typically linked to the accumulation of damaging or harmful chemicals within the living organism.
- The chemicals won't be broken down by the body and aren't capable of being excreted.
- The chemical will begin to build up over time.

- Magnification Plants which are exposed to and absorb chemicals from the soil or in the water will accumulate the chemicals when they aren't able to take them out of their system.
- When animals begin to eat these plants, they also consume the chemical compounds.
- The more they eat plants, the more chemicals they consume.
- This process is known as Bio Magnification.
- It is when the chemical moves higher in the food chain.
- The amount of chemical increases or is increased with each level.
- It is a sign that animals that are at the highest levels in the food chain will accumulate the highest levels of this chemical by bio-magnification.

Topic 7. BHITARKANIKA NATIONAL PARK

Important for subject: Environment



Record-breaking numbers of saltwater crocodiles laid their eggs during the season of nesting during the nesting season this year at Bhitarkanika National Park situated in Odisha's Kendra Para district. Forest officials counting 122 nests over May 1 through June 24 2022. In the years 2020 and 2019 we recorded 100 nests.

- The year 2018 was the first time we observed 101 nests.
- The increasing number of nests show an increase in the population size of Crocodiles is increasing.

- In 1975, a project for crocodile rearing and breeding was launched was initiated in Dangamala within Bhitarkanika was initiated by MOEF in partnership in collaboration with United Nations Development Programme.
- Due to the positive results of the project the population of crocodiles began to increase in the rivers, creeks and water bodies in the park as well as the surrounding areas.
- **Bhitarkanka National Park:** Bhitarkanika is a special Mangrove Forest habitat that is interspersed with numerous mud flats and creeks situated in the Kendra Para district of Orissa.
- It is an official Ramsar Site under Ramsar Convention that is located in wetland areas.
- Bhitarkanika is located in the estuary of the Brahmani, Baitarani, and Dharma & Mahanadi River systems.
- Bhitarkanika National Park an ideal habitat for leopard cat fisherman cat, the jungle cat wild boar, hyena Sambar, spotted deer, dolphin, porcupine and salt water crocodiles, which include the partially white crocodile, the snakes, king cobras, water monitor lizards, terrapin the marine turtle, kingfisher woodpecker, hornbill pintail geese with bar head sea eagles, white bellied as well as terns, sea gulls waders and a huge number of resident and migratory birds.
- The nutrients that originate from Bhitarkanika are flushed into the Gahirmatha Marine Sanctuary, which is home to the world's largest number of Olive Ridley sea turtles for gathering and nesting.
- More than one million turtles come in the winter.

Topic 8. SPECIES EXTINCTION

Important for subject: Environment



Biodiversity As per recent research conducted by University of Minnesota, the extinctions of species currently occurring all over the world could be much more severe than was previously believed. around 30 percent of species are facing global the threat of extinction from 1500 onwards, as per the latest study published on the 18th of July, 2022 within the Frontiers in Ecology and the Environment journal Mass Extinction.

- Duration of Time Extinction Origin of the Extinction Mass.
- The Ordovician Mass Extinction.
- It was the Ordovician period of the Paleozoic Era (about 440 million years ago) up to 85 percent of living species was eliminated.
- Continental drift and the subsequent mass extinctions due to climate change.
- Devonian Mass Extinction.
- The Devonian Period of the Palaeozoic Era (about 350 millennia ago) about 80 percent of all living creatures were eradicated.
- Oxygen levels in oceans rapid cooling of temperatures in the air or volcanic eruptions, meteor strikes. Mass Explosion Permian Mass Extinction.
- It was the Permian Period of the Palaeozoic Era (about 250 million years ago).
- A majority of all living species have been eliminated.
- Unknown--possibly climate change, volcanic activity as well as microbes that cause Mass Extinction.
- **Triassic Jurassic Mass Extinction:** Triassic Jurassic Mass Extinction the close of Triassic Period of the Mesozoic Era (about 200 million years ago).
- Over half the living creatures are gone.
- Major volcanic activity caused by basalt flooding and global climate change as well as the alteration of the pH and sea level in the Oceans. 5 Mass Extinction.
- **K-T Mass Extinction:** The end of the Cretaceous Period of the Mesozoic Era (about 65 million years ago).
- More than 75% of living creatures have been eradicated by Extreme Asteroid or meteor impact, 6 Mass Extinction Holocene Extinction and ongoing.
- The decline of animals has been happening since the time that humans' ancestors began farming more than 11,000 years ago.
- 1 million plant and animal species are in danger of extinction.
- Thousands of them could disappear within the next few decades.

- Around 40 percent of amphibian species on the planet are at risk of extinction.
- In the past century, the amount of native species found in the majority of the habitats that are based on land has dropped by 20 percent.
- Changes in land and marine usage (habitat degrading and disappearing) as well as overexploitation of species as well as invasive species and diseases pollution, climate change and environmental degradation.
- The IUCN Global Species Programme, together and the IUCN Species Survival Commission (SSC) and other partners, are leading the fight to protect species for humans as well as for nature.
- The IUCN Global Species Programme produces and maintains.
- The IUCN Red List of Threatened Species.
- It implements worldwide species conservation programs, which include Red List biodiversity assessment projects to evaluate the condition of species on IUCN Red List.
- IUCN Red List and on the ground conservation initiatives through IUCN Save Our Species and the Integrated Tiger Habitat Conservation Programme (ITHCP).
- The IUCN's headquarters in the world is located at Gland, Switzerland, it includes technical units that are based in Cambridge, UK (Red List Unit) and Freshwater Biodiversity Unit) near Washington DC, USA (Biodiversity Assessment Unit).
- The Species Programme also supports the initiatives associated with the IUCN Species Survival Commission (SSC) and its constituent Specialist Groups, and acts as the Secretariat central point for SSC.
- This is an important component of the IUCN Secretariat.
- The Species Programme and SSC work in conjunction with a variety of partners which include IUCN Red List Partnership, IUCN Red List Partnership along with others IUCN members.
- The IUCN Species Survival Commission is the largest global network of experts in conservation of species, comprising more than 9,000 members worldwide.
- The IUCN is authorized by members of the IUCN (governments as well as NGOs and indigenous communities' organizations) to protect species.
- This exclusive group composed of ecologists, biologists, wildlife managers, social and health researchers and community representatives, educator's economics, and

government officials is committed toward "A just world that values and conserves nature".

- Our lives are dedicated typically on a completely on a voluntary basis, to the preservation of species.
- We join the voices of thousands of concerned citizens from all over the globe.

Topic 9. CENTRE REISSUES DRAFT NOTIFICATION ON WESTERN GHATS ECO SENSITIVE AREA

Important for subject: Environment



The Ministry of Environment, Forests and Climate Change has reissued the draft notice of the Ecologically Sensitive area (ESA), in Western Ghats. The ESA cover 46,832 km (sq km), across Gujarat, Maharashtra, Goa, Karnataka, Karnataka, Tamil Nadu, and Goa. Of which, 20,668 sq. Karnataka is km.

What is Eco-Sensitive Zone?

- Notification of land area less than 10 km from the borders of national parks or wildlife sanctuaries must be done as eco-fragile zones (ESZ).
- The 10-km rule can be applied as a general principle. However, it can be extended to different areas. If they contain larger ecologically significant "sensitive corridors", the Union government can notify them as ESZs.

Why are Eco-Sensitive Zones created?

- ESZs serve as shock absorbers for protected areas to reduce the impact of human activities on fragile ecosystems.
- These zones are intended to be a transition zone between areas that require higher protection and those that need less protection. ESZs do not intend to hinder the daily activities of residents in the area, but to protect the protected areas and "refine their environment."
- **List of prohibited activities in an ESZ:** commercial mining, sawmills, wood use, etc.
- Other than regulated activities such as felling trees, permitted activities include ongoing agricultural or horticultural techniques, rainwater harvesting and organic farming.
- The entire Western Ghats Ecology Expert Panel, (WGEEP), designated the hill range as Ecologically Sensitive Area (ESA).
- The report placed Western Ghats' boundary in Ecologically Sensitive zones (ESZ).
- 1, 2, and 3 ESZ-1 were of high priority.
- Nearly all development activities (mining, power plants, etc.) are allowed.
- It was recommended that no new dams built on large-scale storage in Ecologically Sensitive Zone 1 be allowed.
- It demanded a bottom-to-top approach (right from Gram Sabhas) to governance of the environment.
- The commission recommended the creation of a Western Ghats Ecology Authority (WGEA) as a statutory authority under Ministry of Environment and Forests with the powers under Section 3.
- Of the Environment (Protection) Act.
- This was done by the 1986 Kasturirangan Committee.
- To examine the WGEEP report, the Kasturirangan committee was formed.
- Instead of the entire area of Western Ghats (37%), the Kasturirangan committee (i.e. 60,000 sq. km.) ESA should be included in the total area.
- There is a complete ban on all mining, quarrying, and sand mining within ESA.
- The committee distinguished between cultural (58% of which are located in the Western Ghats by it, such as human settlements and agricultural fields, and natural landscape (90% should be included under the ESA).

- The current mining areas within the ESA must be eliminated by the end of the next five-years.
- No thermal power should be permitted and hydropower projects can only be approved after a thorough study. Red industries.
- These substances are extremely polluting and should be banned from these areas.
- It exempted inhabited areas and plantations from the scope of ecologically sensitive zones

Topic 10. WHAT IS ECOCIDE?

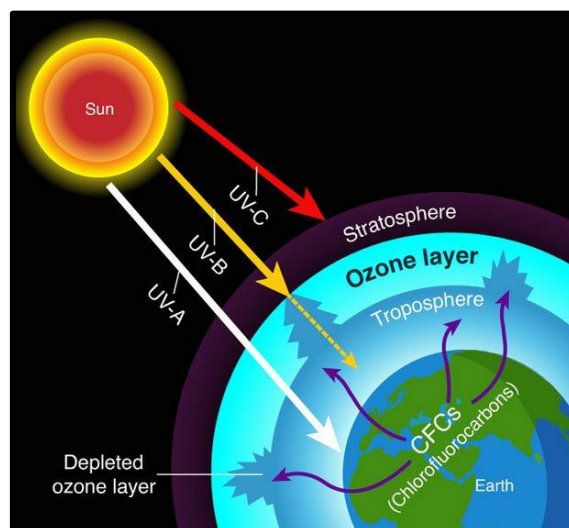
Important for subject: Environment

Ecocide refers to human impacts on the environment that cause mass destruction.

- It refers to "illegal or wanton acts that are committed with the knowledge of severe and/or long-term environmental damage."
- This would be the only international crime not requiring direct human impact if it is adopted and incorporated into the Rome Statute.
- Ecocide has been a crime in ten countries.
- A group of 11 citizens representing nine EU countries launched the European Citizens Initiative (ECI), to End Ecocide in Europe, on January 22nd 2013.

Topic 11. DOES TROPICAL OZONE HOLE EXIST?

Important for subject: Environment



The latest study shows that the ozone hole can be found at altitudes between 10-25km above the tropics.

What is the tropical ozone hole?

- Over the tropics, a new ozone hole was detected at latitudes between 30 and 30 degrees south.
- Since the 1980s, the hole has been significant.
- It was only discovered in this study.
- The size of the tropical ozone hole in Florida is seven times greater than that of Antarctica.
- It is also visible in all seasons, unlike Antarctica which can only be seen in spring.
- Due to its risks, the tropical ozone hole (which covers 50 percent of Earth's surface) could be a concern worldwide.
- It can cause skin cancer and cataracts, as well as other adverse effects on the health of ecosystems and ecosystems in tropical areas.
- The temperature in the tropical stratosphere was between 190 and 200 Kelvin (K).
- This is why the tropical ozone hole forms over the seasons.

What is ozone?

- Ozone is a colourless gas.
- Ozone is very active chemically; it reacts well with many other substances.
- These reactions can cause rubber to crack near the Earth's surface.
- Ozone can also absorb harmful components of sunlight.
- This is known as "ultraviolet B" or "UV-B". A thin layer of ozone gas, which is high above the surface and above all weather systems, absorbs UV-B. It protects living things below.

What is the ozone hole?

- The Southern Hemisphere spring is when chemical reactions involving bromine and chlorine cause the destruction of ozone in southern Polar Regions.
- This region is also known as the "ozone gap".
- An ozone hole refers to an area in which ozone levels fall below the historic threshold of 220 Dobson Units. (DU is the measurement of ozone concentrations).
- **Montreal Protocol:** The Montreal Protocol on Substances.

- That Deplete the Ozone Layer (or simply the Montreal Protocol) is a landmark multilateral environmental accord that regulates nearly 100 chemicals that are man-made and referred to collectively as "ozone depleting substances" (ODS).
- The Protocol was adopted on 15 September 1987 and is the only UN treaty that has been ratified by every country on Earth, all 198 UN member states.
- The Kigali Amendment: Parties to Montreal Protocol came to an agreement on 15 October 2016 in Kigali (Rwanda) to phase down HFCs.

Topic 12. SUSTAINABLE DEVELOPMENT GOAL 15: WORLD OFF TRACK ON PROTECTING LIFE ON LAND, FINDS UN REPORT

Important for subject: Environment



According to the Sustainable Development Report 2022, the overall progress in SDG-15 has slowed down in 12 sub-Saharan African countries.

- **Sustainable Development Report 2022:** This report provides a global assessment on countries' progress towards the Sustainable Development Goals.
- It was published by an independent group of experts from the Sustainable Development Solutions Network (SDSN).
- SDSN was established in 2012 to mobilize scientific and technological knowledge worldwide to promote sustainable development and implement Sustainable Development Goals (SDGs).
- After their adoption, SDSN has now pledged to support the implementation of SDGs at national and international levels SDG India Index.

- It was created by NITI Aayog in collaboration to the United Nations in India.
- It was launched for the first time in 2018
- It calculates the goal-wise score on each State and Union Territory State. Union Territories are classified below based upon their SDG.
- **India Index Score:** Aspirant: 0-49 Performer, 50-64 Front-Runner, And 65-99 Achiever. 100 Sustainable Development Goals.
- It is a collection 17 interconnected global goals that are intended to serve as a "blueprint for a better, more sustainable future for everyone."
- The United Nations General Assembly (UNGA) created the SDGs in 2015.
- They are intended to be completed by 2030.
- They are part of the UN-GA Resolution titled the 2030 Agenda.
- The Post-2015 was the year that the SDGs were created.
- The Development Agenda is the future global framework for development to replace the Millennium Development Goals, which were terminated in 2015.
- The 17 SDGs are:
 1. No poverty
 2. zero hunger
 3. good health and well-being
 4. quality education
 5. gender equality
 6. clean water and sanitation
 7. affordable and clean energy
 8. decent work and economic growth
 9. industry, innovation and infrastructure
 10. Reduced Inequality
 11. Sustainable Cities and Communities
 12. Responsible Consumption and Production
 13. Climate Action
 14. Life Below Water
 15. Life On Land
 16. Peace, Justice, and Strong Institutions
 17. Partnerships for the Goals

Topic 13. AN UPCOMING PORT IN KARNATAKA IS SHRINKING SPACE FOR OLIVE RIDLEY TURTLES

Important for subject: Environment



The port could also have an impact on the Mugali Marine Protection Area. This is Karnataka's first marine protected area. It houses more than 15 species that are subject to the most stringent protection under India's Wildlife Law.

- Honnavar is a sub-district of the Uttara Kannada Karnataka district.
- **It covers seven villages:** Apsarkod in the south, Kasarkod in the middle, Karki in the middle, Mallukurva in the center, Haldipur in the north, and Pavinkurve at the end.
- The National Marine was launched by the Union Ministry of Environment, Forests, and Climate Change in February 2021.
- Turtle Action Plan (2021-2026).
- According to the action plan, one of the greatest threats to turtles was the construction of jetties and ports.
- About the National Marine Turtle Action Plan.
- This action plan aims to consolidate and sustain collective and cooperative sea turtle conservation through monitoring key sites and the establishment of a network with partners in the Indian subcontinent.
- This project provides ways and means to promote conservation across all sectors and improve coordination between government, civil society, and other relevant stakeholders.
- This article outlines the actions that should be taken to handle stranded, entangled or stranded animals at sea or on boats, as well as reducing marine species' threats and habitats.
- Rehabilitation is also possible.
- **Indian Marine Turtles:** Five species of sea turtles are found in the Indian coast waters.

- These include the Olive ridley, Green (Cheloniemydas), Hawksbill (Eretmochelys imbricata), Leatherback and Loggerhead (Caretta caretta).
- These five sea turtle species that live in Indian coast waters are protected by Schedule I of 1972's Wildlife (Protection) Act.
- India is the home of the largest nesting population known of olive ridley turtles.
- Other than Loggerhead turtles the four remaining species (Leatherback turtles, Hawksbill turtles, Green turtles and Olive ridley turtles), nest along India's coastline and islands.
- Every year, approximately 40,000 to 11 00,000.
- Turtles nest on Indian beaches.
- The number of nesting turtles varies over time.
- Habitat degradation and predation have led to the decline in success rates of sporadic nests.

Topic 14. MICRONESIA- THE REMOTE PACIFIC ISLANDS THAT HAVE FINALLY SUCCUMBED TO A COVID OUTBREAK

Important for subject: Geography



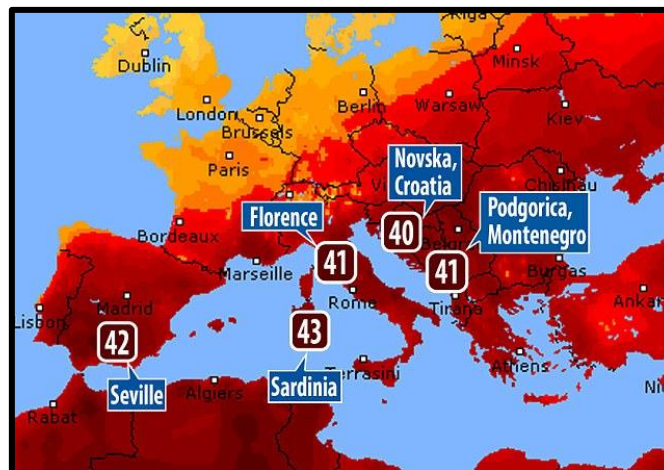
After two and a quarter years of protecting itself against the virus, mapping the Federated States of Micronesia is now experiencing an outbreak of Covid-19. It is a tiny island nation in the Pacific that has around 110,000 inhabitants.

- Micronesia's geography is found in the Western Pacific in the Micronesia Sub-region of Oceania.
- The Federated States of Micronesia or FSM consists of four islands states Yap, Chuuk and Kosrae, which are all located in the Caroline Islands.
- It is also known as the Caroline's.
- This scattered archipelago of small island clusters is divided between Micronesia (the Republic of Palau) and Micronesia (the Republic of Palau).

- The Federated States of Micronesia shares their sea borders with other Micronesia islands and territories like Guam, Palau, Kiribati and Palau.
- Its largest neighbouring countries, separated by vast swathes Pacific Ocean, are the Philippines to the west, Hawaii to the east, Papua New Guinea to the south, Australia to the north, and Papua New Guinea to the east.

Topic 15. THE SWELTERING HEAT WAVE ACROSS EUROPE

Important for subject: Geography



The vast majority of Europe and the U.K. and the U.S. are suffering from extreme heat waves.

What is behind the extreme heat waves?

- The heat waves are the result of the climate changes due to human activity.
- The global temperature has already increased by over 1degC and research of the U.K. showed that a 1 degree increase in temperature increases the likelihood of the nation experiencing 40 degrees Celsius by ten times.
- The increasing global temperature that this year has resulted in deviations over the norm by more than fifteen degrees Antarctica and by greater than three degrees at North Pole.
- North Pole, have also changed the patterns of wind.
- These changes transformed Western Europe into what has been called “a "heat dome" a low pressure zone that began to draw warm cold air coming from North Africa.
- In the instance of U.S., the record temperatures are connected to fluctuations in jet streams which is a small band of air currents from the west which circulate for several kilometers over the surface of the earth.

- Although a traditional strong jet stream is expected to provide cooler temperatures from northern Atlantic.
- In recent years, it has been weakening and split in two, leading to more intense and frequent heat waves in regions of the American continent.

What is Heat Dome?

- A heat dome develops when the atmosphere holds the hot ocean air, forming caps or lids.
- The term "heat dome" refers to the time when powerful atmospheric conditions of high pressure are combined with the influence of La Nina, creating vast regions of scorching heat that are trapped beneath the pressure "dome."
- Imagine a pool in which the heater is on.
- Temperatures rise rapidly in the areas around the heater jets, whereas the other areas of the pool take longer to warm.
- If one imagines that the Pacific as a huge pool, then the western Pacific's temperature has risen over the last couple of years compared to the eastern Pacific which has resulted in a dramatic temperature gradient or pressure variations that create winds across the whole ocean during winter.
- In a process referred to as convection this causes warm air, which is heated by the ocean's surface, to rise above the western Pacific and lowers convection across the eastern and central Pacific.
- When the prevailing winds push the hot air eastward the northern shifts of the jet stream catch the air, and push towards land, which is where it sinks, resulting with heat waves.

Topic 16. TRIBES IN NEWS

Important for subject: Geography

Recent research has shown that Baigas do not know what forest rights are and how to recognize them.

- Baigachak in Madhya Pradesh was the first area to be granted Habitat Rights under the Forest Rights Act in 2015.
- It includes seven villages where the Baiga tribe resides.
- Many people in the area don't know about these rights and are not aware of them.

Topic 17. RICE CRISIS

Important for subject: Geography



Although overall crop coverage has increased since last year, rice's share of the total crop is still down

- Rice Cultivation This is India's most important agricultural crop, accounting for more than 40% of India's total food grain production.
- India is the largest rice exporter in the world.
- Rice can be grown as either a monsoon (kharif) or winter-spring (Rabi) season crop.
- India is 2nd largest rice producer.
- Rice cultivation requires warm and humid climates.
- It's ideal for areas with abundant water supply, high humidity, and long sunshine.
- The temperature at which the crop should be grown is between 20 and 40 degrees Celsius.
- Uttar Pradesh, Punjab Puddled and West Bengal are the next largest producers of rice.
- The traditional method involves young paddy plants being raised in nurseries by farmers first, and then they are uprooted and transplanted into a puddled area.
- Traditional puddled transplantation means that fields are flooded during transplantation and for between 30-35 days thereafter.
- The stagnant water also prevents the growth weeds to a great extent in the 'Sanda' double-transplanting method.

- This method of cultivation is used by farmers in eastern UP who have access to basic irrigation and are subject to delayed rains.
- After 25 days in the nursery, the seedlings will be rooted and replanted in a puddled area that is about twice their size.
- After establishment, the plants begin to tiller and are then rejuvenated for the next 10-15 day.
- This method yields better results than regular one-step transplanting.
- It is because the Sanda plants are already cultivated and would establish themselves in the main field at a rate of close to 100%, with very little mortality.
- Although yields are higher by 15-20%, this is offset by the fact that transplanting labour has to be paid twice.

Topic 18. COPPER IN INDIA

Important for subject: Geography



According to government data, India's refined copper production has fallen steadily from its peak of 799,000 tonnes in 2016-17. It has now dropped to 364,000 tonnes by 2020-21.

- Worse, after being the net exporter (3333, 000 tonnes) for 2017-18, we have fallen to becoming a net importer (31,000 tonnes) for 2020-21.

- This serious slippage can be attributed to the fact that the Sterlite copper melting plant in Tuticorin (Tamil Nadu), which has a production capacity of 400,000 tonnes per year, has been closed for four years.

Why is copper important?

- Copper is an important industrial metal and the metal that can be used for electrification.
- It is used to charge infrastructure for photovoltaics-electric vehicles.

Topic 19. LIGHTNING TOLL DOWN 60% IN 3 MOST VULNERABLE STATES: REPORT

Important for subject: Geography



The Climatology Lightning Resilient India Campaign created a Lightning Atlas which details strikes in all States/UTs and their impacts. Even today, lightning is not considered a national emergency.

- According to Ministry of Home Affairs guidelines it has been declared a state disaster by 16 countries.
- This allows access to 10% of the State Disaster Response Fund.

What is lightning?

- Lightning is a rapid and powerful release of electricity into the atmosphere.
- It's the occurrence of an electric discharge between the cloud and the ground, or within the cloud.
- There are two types.
- These include:
 - **Lightning Intercloud or Intracloud:** These are both visible and innocuous.
 - **Cloud-to-ground (CG) lightning:** This can be dangerous as the 'high voltage discharge for very brief time leads to electrocution.

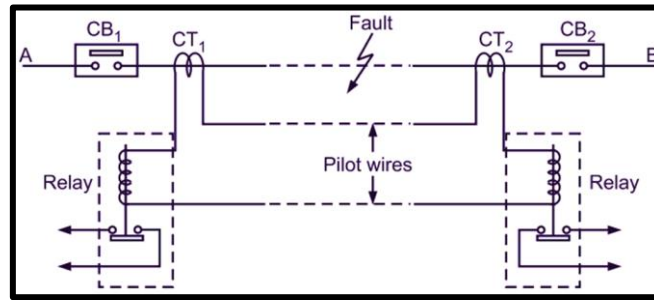
- Cloud-to-Ground (CG) Lightning.
- A channel of negative charge called a stepped leader in CG lightning will zigzag down in a 'forked' pattern.
- This is why it is sometimes called forked lightning.
- The stepped leader is invisible to human eyes and travels to ground in milliseconds.
- The negatively charged leader, as it approaches the ground, is attracted by a channel of positive charges reaching up, a streamer.
- This streamer usually passes through something tall like a tree, house or telephone pole.
- When the streamer and leader are charged with opposite charges, an electrical current starts flowing.
- This is why it is not advisable to stand beneath tall objects during thunderstorms!).
- A return stroke, the very visible flash we call lightning, travels about 60,000 miles per hour back to the cloud at approximately 60,000 mph. One flash can contain as many as 20 return strokes.
- Negative Cloud-to Ground Lightning (-CG)
- The most common CG flashes involve a negatively charged, downward-moving stepped leader that is followed by an upward-moving return stroke.
- This flash has the net effect of lowering the negative charge in the cloud.
- You can identify negative CG lightning strikes by their distinctive down branching.
- Positive Cloud-to Ground Lightning (+CG) Less common CG flashes are triggered by a positively charged stepped leader that is downward moving.
- The return stroke, which lowers earth's positive charge, is then upwardly travelling.
- This lightning is often associated with supercell thunderstorms and following strati form precipitation areas behind squall lines.
- Positive cloud-to ground lightning strikes are often very bright relative to other lightning activity.
- They can be distinguished by the absence of branching close to the ground.
- Thunder caused by such lightning can be very loud and sound like a series low-frequency, thunderous booms.
- Sprites (see side box) are often associated with stronger positive CGs.

- **Cloud to-Air (CA), Lightning:** A discharge that jumps out of a cloud into clear, uncontrolled air and ends abruptly.
- CG lightning is actually composed of CA lightning via branches that extend from the main channel to the mid-air.
- The most striking examples are those where long, bright lightning channels run from the side's cumulonimbus clouds.
- **Ground to-Cloud (GC), Lightning:** An upward-moving leader that originates from an object on ground causes a discharge between ground and cloud.
- Ground-to-Cloud lightning strikes, also known as upward-moving lightning, are often seen on tall buildings and skyscrapers.
- The polarity of GC lightning can also vary.
- Lightning with upward branching is an indication of a ground to cloud flash.
- However, some lightning that moves upwards is branchless below the cloud base.
- **Intracloud (IC) Lightning:** This type of lightning is the most widespread. It refers to lightning embedded in a storm cloud and which jumps between various charge regions within the cloud.
- Sheet Lightning refers to lightning that is visible from the sky and is caused by lightning.
- The lightning channel can be either below or within the clouds.
- Not visible to the observer.
- It is often associated with IC Lightning, but it can be any lightning that is obscured by clouds or terrain.
- Heat lightning is a related term.
- It is lightning or lightning-induced illumination too far away to hear thunder.
- Because heat lightning is most common on hot summer nights when thunderstorms are not as frequent, it got its name.
- Cloud-to-Cloud (CC) Lightning (or inter cloud lightning).
- Lightning can travel between clouds, although it is rare.
- Spider lightning is a long, horizontal flashing light that can be seen under strati form clouds.
- Lightning strikes the ground and melts the soil, especially sandy soil. It leaves behind a root-like structure called a Fulgurite.

- A fulgurite (or melted sand) is a very narrow, 1/2 to 1 inch wide segment of glass (melted sand).
- Lightning Atlas of India.
- It provides detailed analysis and maps of all lightning strikes in the United States and Union Territories.
- It uses micro-zonation at the district level.
- **Distribution:** Madhya Pradesh is the most populous state with the highest number of lightning strikes.
- More strikes were recorded in Maharashtra and Chhattisgarh than in Odisha.
- There are several States that have more than 21,000 CG strikes, including West Bengal, Jharkhand and Karnataka.
- Kutch, in Gujarat, is the lightning-prone district, alongside Mayurbhanj, in Odisha.
- However, Mayurbhanj's mortality rate is higher due to the socio-economic Lightning Resilient India Campaign.
- The Climate Resilient Observing Systems Promotion Council, India Meteorological Department and the Ministry of Earth Science (MoES) jointly initiated the campaign.
- It provided early warning services from IMD and knowledge products from various MoES institutions to stakeholders.
- This was a valuable resource for the community and gave them value-added insight that will lead to more meaningful outcomes.
- Another Govt initiative to lower Lightning toll Damini App.
- It was created by the Indian Institute of Tropical Meteorology, IITM-Pune, and Earth System Science Organization (ESSO), under the ministry of Earth Sciences.
- The app monitors lightning in India and alerts users when lightning is near them via a GPS notification.
- The Damini app can also alert you about lightning strikes up to three hours before they strike, which can reduce property and life losses.

Topic 20. TRANSMISSION PROTECTION INSTRUMENT

Important for subject: Economy

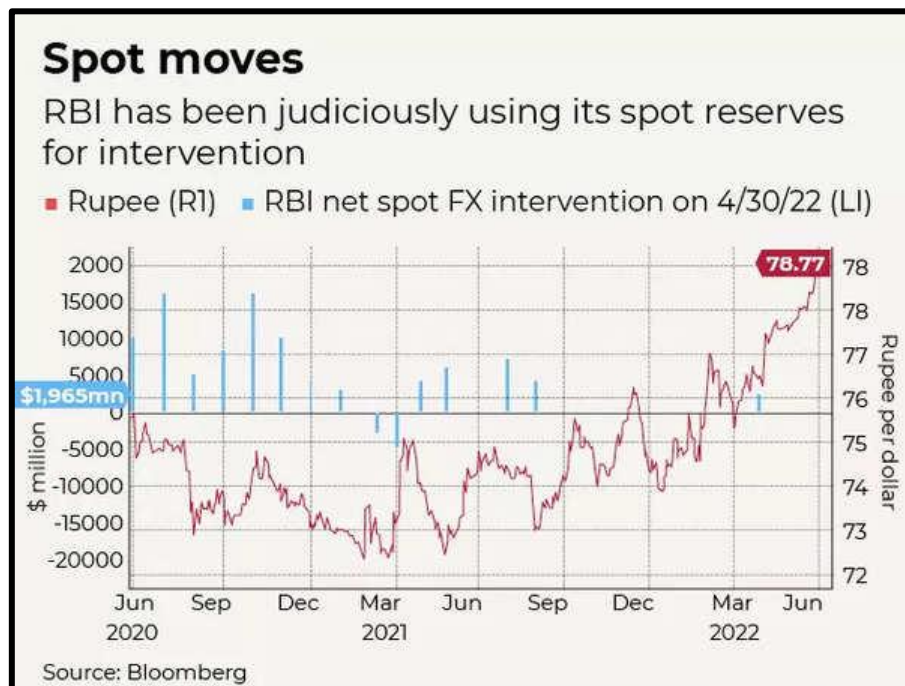


The European Central Bank lifted its record low minus 0.5% deposit interest rate to zero. This is the first rate increase in over 11 years. The main refinancing rate has been increased to 0.50%, ending an eight-year-long experiment with negative interest rates. The ECB rates rising means that borrowing costs for countries such as Italy, Spain, and Portugal increase disproportionately. Investors demand a higher premium to keep their debt. The ECB approved a new bond buying scheme, the Transmission Protection Instrument.

- **Transmission Protection Instrument:** Approved By the Governing Board of the ECB Beneficiary - Eurozone (outside of 19 other indebted countries).
- The eurozone (EZ), a monetary union made up of 19 members of the European Union (EU), is called "The Eurozone".
- They have adopted the euro (EUR), as their sole legal currency.
- It will ensure that all countries in the euro area are aware of the current monetary policy position.
- This bond purchase scheme is designed to limit the Eurozone's borrowing costs while limiting financial fragmentation.
- It will allow secondary market purchases of securities issued by countries experiencing deterioration or insufficient financing conditions to be made by the Euro system to offset risks to the transmission mechanism.
- The Euro system is the monetary authority for the euro zone.
- TPI purchases will vary depending on the severity of policy transmission risks. They are done both ex-post ally and ex-ante.
- **TPI Purchase Parameters:** These would include public sector securities (marketable bonds issued by central and/or regional governments, agencies as well as central government) with a maturity remaining between one and ten.
- If necessary, private sector securities may be purchased.

Topic 21. CENTRAL BANK'S CURRENCY-MARKET INTERVENTION STRATEGY

Important for subject: Economy



RBI will spend \$100 billion more in defence of the its currency, the rupee having fallen by more than 7 percent of its value by 2022 and has weakened beyond the psychological mark of 80 dollars per US dollar.

- Reserves for currency at the RBI have decreased by over \$60 billion since their highest of \$642.450 billion in the early part of September.
- **Changes in valuation-** due to depreciation in Euro and other foreign currencies used as assets of the forex market selling intervention by RBI to balance rate of exchange depreciation.
- The reserves of the RBI at \$580 billion continue to be the fifth-largest in the world, which gives that central bank faith in their capacity to stop any sudden appreciation of the currency.
- **Central bank's strategy for intervention in the market of currencies:** The goal of the RBI's intervention strategy is to let the rupee discover its true value in the market without creating excessive instability or creating unnecessary panic in investors.
- The central bank is responsible for ensuring that there's no dramatic decrease in the value of the rupee.

- The RBI intervenes in the market for currency to help support the rupee since an unsound currency could increase the import bills.
- There are several methods that RBI intervenes.
- It is able to be directly involved in market for currency by purchasing or selling dollar.
- If the RBI wants to boost the value of rupee, it could sell dollars.
- Likewise, when it has to reduce the value of the rupee the RBI can purchase dollars.
- The central bank is also able to affect the value of the rupee via the monetary policy.
- RBI can alter repo rates (the amount in which RBI lends money to banks) as well as the liquidity ratio (the part of the funds banks must invest in bonds issued by government) to regulate the rupee Indirect method.
- The RBI can direct certain state-owned banks to sell dollars on the market for spot sales.
- To sterilize the dollar spot market sales Banks converted them into forwards contracts via buy-sell swaps.
- This can be beneficial in two ways.
- It first protects the reserves of foreign currency.
- The second is that the forward deal reduces the effect of spot-based interventions on liquidity.

Topic 22. SPECIAL ECONOMIC ZONE

Important for subject: Economy

Commerce department, under the ministry of commerce has issued that a new rule 43A has been issued for WFH under the Special Economic Zones Rules, 2006.

- The rules for working from home apply in Special Economic Zones.
- These are considered to be areas that are which there are different regulations for economics than other regions in India.
- Homework is permitted in the special economically zone (SEZs) for the duration of one year.
- It could be extended up to the maximum of 50% of the all employees, including contractual employees.
- The new rules allow work-from-home for a specific category of employees working for a company within SEZ employees of IT and ITeS SEZ units.

- Employees with temporary incapacities employees who are on the move who work offsite.
- Flexibility available to Development commissions (DC) from SEZs for the purpose of approving an increase in the number of employees based on a legitimate reason.
- Extends the period of one year by a further year at the unit's request.
- The notice provides an opportunity for a 90-day period of transition for approvals for SEZ units where employees already work at home.
- The devices and secure connection to WFH for employees needs to be supplied through the SEZ units themselves.
- **Special Economic Zone:** The term "SEZ" refers to an area within a nation that is generally duty-free, and is subject to different commercial and business laws primarily to encourage investment and to create jobs.
- The first Asia-based EPZ (Export Processing Zones) was created in 1965 in Kandla, Gujarat.
- Although these EPZs were similar in structure like SEZs.
- However, it was the Government that decided to set up SEZs in the year 1999 under Foreign Trade Policy to redress the bureaucratic and infrastructure challenges that hindered the growth of EPZs.
- The Special Economic Zones Act was adopted in the year 2005.
- The Act became effective as did SEZ Rules in 2006. SEZ Rules in 2006.
- **Objectives of the SEZ Act:**
 - To stimulate economic activity.
 - To increase exports of services and goods.
 - To generate employment.
 - To boost foreign and domestic investment.
 - To develop infrastructure facilities.
- India's SEZs were closely aligned with China's model of success.
- At present, 379 SEZs have been registered, of which 265 have been operational.
- There are eight SEZs that are operational in India currently, including -the cities of Santa Cruz (Maharashtra), Cochin (Kerala), Kandla and Surat (Gujarat), Chennai (Tamil Nadu), Visakhapatnam (Andhra Pradesh), Falta (West Bengal) and Noida (Uttar Pradesh).

- **A majority of SEZs are situated in five states:** Tamil Nadu, Telangana, Karnataka, Andhra Pradesh and Maharashtra.
- The Board of Approval is the Apex body that is headed by the Secretary of the Department of Commerce (Ministry of Commerce and Industry).
- **Major incentives and facilities available to SEZ:** Duty-free import or domestic purchase of goods for operating, developing or managing SEZ units.
- 100% exemption from taxation on export earnings SEZ units in the Income Tax Act for first 5 years, and 50 percent in the 5 years after that and 50 percent of the ploughed back export earnings for the five years to come.
- (Sunset Clause for Units to take effect in 2020.).
- Units are exempt of Minimum Alternative Tax (MAT).
- They were exempt by Central Sales Tax, Service Tax and State sales tax.
- They are now subsumed under GST and SEZ supplies are exempt from taxation in GST. IGST Act, 2017.
- One window clearance is required for Central and State-level approvals.
- There is no requirement for a licence to import.
- In the manufacturing industry except for a handful of segments all FDI in the manufacturing sector is permitted.
- The profits earned can be returned to the country at any time without need to balance dividends.
- There is no requirement for separate documents for customs or export-import policies.
- A lot of SEZs provide plots that are developed and space that is ready to use.
- **Contributions:** There are about 2 million employees employed in more than 350 SEZs.
- SEZs account for more than 25% of the total exports to India.
- The majority of SEZs in India contain IT (IT) as well as IT enabled service firms.

Topic 23. FACTORS OF FALLING EXCHANGE RATE AND IMPACT

Important for subject: Economy

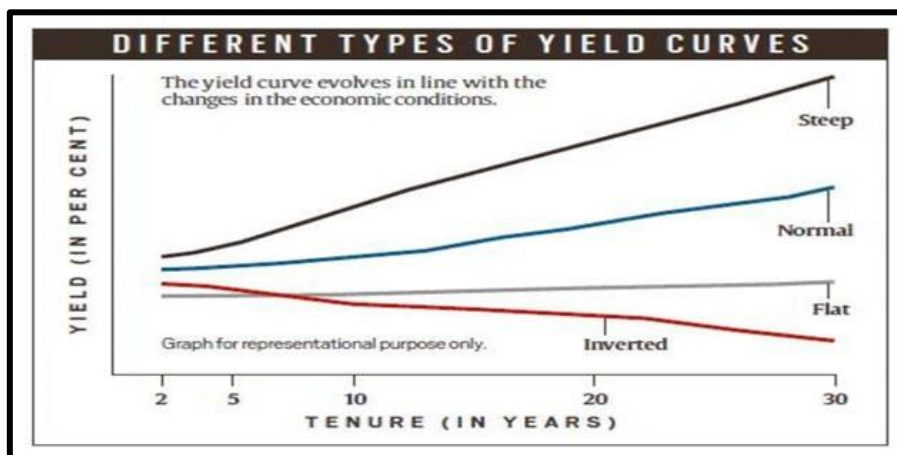
Since the conflict in Ukraine and the subsequent rise in crude oil prices, the Indian rupee has been steadily losing its value in comparison to the dollar.

- Although there is no doubt that the US dollar has strengthened against other currencies, including the rupee the rupee, as a result has grown stronger than the majority of other currencies like the euro.
- Reserves in the forex market have dropped by more than \$50 billion between September 2021 to the present.
- In the past 10 months the rate of exchange for the rupee against the dollar has decreased 8.7 percent, compared to a normal depreciation of 3-3.5 percent over the course of a year.
- **Factors:** Increase in US rate of interest.
- The Federal Reserve has been raising the benchmark interest rate to cause investors looking for greater returns to draw capital out of emerging markets like India and into the U.S.
- **The rise in the Current Account deficit-**This implies that India's increasing import requirements in the face of the rising prices of oil globally will likely impact negatively the rupee, unless foreign investors invest enough funds into the nation in order to cover the deficit.
- However, foreign investors are not likely to put money into India as the investment yields are increasing within the U.S.
- **Inflation-** Higher inflation in India indicates it is because the RBI has created rupees at a greater pace than U.S. Federal Reserve is creating dollar.
- **Thus, higher supply of rupee Impact:** Imported inflation- when the rupee is depreciating the importation of items and services is more expensive.
- Costlier Imports contribute to cost-push inflation.
- As a majority of India's imports is dollar-based this means that imports are more expensive, such as the import of crude oil.
- The higher cost of imports, which and in turn, they will increase the trade deficit, as well as that of the deficit in current accounts which can, in turn, increase pressure on rates of exchange.
- **Increase export competitiveness:** If you want to sell goods or products to countries other than the United States, particularly towards United States of America, for example. United States,
- The products of India are more competitive due to depreciation, which reduces the cost of these goods in the eyes of foreign customers.

- If the other currency has suffered greater than rupees, then the effect may be negative for exports out of India.
- **Capital outflows:** A weakening of the rupee is detrimental to foreign investors, who were seeking a high return, and Indians who have loans abroad.
- Implications on Balance of payments, due to deficits in the capital and current account could result in a total BOP deficit.
- **Impact on Forex reserves:** RBI comes in and eliminates all dollar deficit out of the market by selling reserves of forex, thus decreasing the forex reserve as well as the cover for imports.

Topic 24. BOND YIELD AND RELATED TOPICS

Important for subject: Economy



The US central bank has increased interest rates rapidly, but the June inflation rate was 9.1%. Many observers believe this is an inversion of US yield curve. They argue that the US central banks will not be able achieve soft-landing for their economy. There has also been a trend of "reverse currency warfare" where central banks around the globe are trying to increase their interest rates in an effort to counter the Fed's actions. This will ensure that their currencies don't depreciate against the dollar.

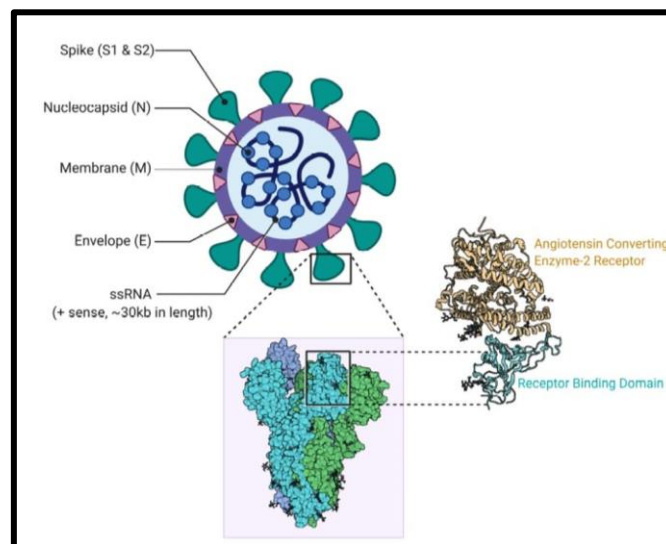
- **Bond yield curve inversion:** The yield curve is a graphic representation of the yields from bonds with an equal credit rating over different time periods.
- The yield curve would be formed if one took the US government bonds with different tenures and plotted them according to their yields.
- Normal circumstances would see an economy with a downward-sloping yield curve.
- It is a sign that one can get higher yields if one purchases bonds with a longer tenure.

- The return on money that is given to someone for a longer period of time should be greater.
- A longer tenure means that there is more risk of failure.
- When bonds with a tenure of two years or more pay higher yields than bonds with 10 year tenures, the bond yield curve is inverted.
- This inversion of yield curve suggests that investors are expecting future growth to be slow.
- Investors who suspect the economy is in trouble will pull money out of short-term risky assets such as stocks markets and invest it in long-term bonds.
- This causes long-term bond prices to rise while their yields to drop (bond prices are invertedly related to bond yields).
- The strong predictor of recessions is the inversion of the bond yield curve.
- The US Fed is currently raising short-term rates.
- This further increases the yield curve's short-end and dampens economic activity.
- Soft-landing Monetary tightening (raising the rate of interest) is a process that reduces the money supply while increasing the cost of money (that's, the interest rate).
- This is done to control inflation.
- In theory, any central bank monetary tightening should slow down the economy but not lead to a recession.
- An increase in the interest rate reduces private investment and growth.
- A soft-landing is when a central bank succeeds in slowing down an economy without causing a recession.
- However, a hard landing is when the central bank's actions cause a recession.
- **Example:** Given the huge gap between the US inflation rate (over 9%) and the Fed's target inflation rates (2%), most observers believe that the Fed will have to resort to such aggressive tightening of the monetary system that the US economy would end up with a hard landing.
- **Reverse currency War:** Rising interest rates cause capital inflows. This is due to the interest rate differential which causes currency appreciation.
- **Example:** The recent Fed interest increase has resulted in large scale capital inflows to the US, which has caused appreciation of the dollar relative to other currencies, because the dollar is in greater demand than yen and euro etc.

- Their exports are more competitive because of the relative weakness in local currency against dollar.
- A Chinese or Indian exporter, for example, gets a huge boost.
- The US has accused many countries in the past of making their currency less strong against the dollar to gain a trade surplus with the US.
- This was once known as the currency war.
- Every central bank today is working to find ways to counter the US Fed, raise their interest rates and ensure that their currency does not lose too much against the dollar.
- This is known as the reverse currency war.
- A currency that is losing its value relative to the dollar finds it more expensive to import crude oil and other commodities, which are often traded in dollars.
- However, raising the interest rate comes with its risks.
- Similar to the US, higher interest rates can decrease the chance of an economy soft-landing.

Topic 25. SPIKE PROTEIN

Important for subject: Science and Technology



The study discovered specific mutations in those spike proteins in the new coronavirus which aid in Omicron sub variants avoid antibodies. These antibodies could be result from vaccinations or previous COVID-19-related infections.

- Spike protein protrudes from surface of coronaviruses, similar to the spikes found in coronas or crowns which is why it's called "coronavirus".

- In the SARS-CoV-2 coronavirus this is the protein spike that starts an infection process within human cells.
- It binds itself to a human enzyme, referred to as the ACE2 receptor.
- This is followed by entering the cell to make copies of the enzyme.
- **Applications:** Researchers believe that the results can be used to help develop vaccines.
- Numerous vaccines that are being developed use the spike protein in order to stimulate your immune system.
- However, these could be different mixtures of post fusion and perfusion forms, and this could limit their efficacy in protecting.
- It is necessary to stabilize the spike protein's perfusion configuration to prevent the changes in conformation that can lead to the post-fusion state.
- If the protein isn't stable, antibodies can be created, but they will not be as efficient in stopping the virus.

Topic 26. WHAT IS THE MARBURG VIRUS, THE EBOLA-LIKE OUTBREAK NOW CONFIRMED IN GHANA?

Important for subject: Science and tech

Ghana has confirmed the first two cases, which are highly infectious Ebola-like diseases, of Marburg virus.

What is the Marburg virus disease?

- Marburg haemorrhagic febrile fever was previously known. It is a severe and often fatal haemorrhagic fever.
- The natural hosts of Marburg virus are Rousettus fruit bats.
- However, the first human infected person was an African green monkey from Uganda.
- After simultaneous outbreaks in Marburg, Frankfurt and Belgrade in Germany, it was first discovered in 1967.
- On average, the disease causes death at around half of its victims.

What are the symptoms for Marburg virus disease?

- The onset of symptoms can occur anytime between 2 and 21 days.

- It can manifest as high fever, severe headaches, muscle aches, and severe muscle pain.


How can Marburg virus disease diagnosed and treated?

- It is not possible to distinguish MVD clinically from other diseases like malaria, typhoid fever, and other viral haemorrhagic infections.
- However, lab testing can confirm it.
- As of right now, there is no approved antiviral vaccine or treatment for MVD.
- The treatment of certain symptoms and the rehydration with intravenous or oral fluids can prevent death.
- **Ebola Virus:** The Ebola virus (EVD), a deadly virus that can cause severe illness, is most often found on the African continent.
- EVD is most common in people and non-human primates, such as gorillas, monkeys, and chimpanzees.
- It is caused when a group of viruses in the genus Ebolavirus is infected. The virus was first identified in 1976 near the Ebola River in the Democratic Republic of Congo.
- The virus spreads first to humans through direct contact with blood, body fluids, and tissues from animals.
- The Ebola virus can then be transmitted to others by direct contact with bodily fluids of people who have been ill with or died from EVD.
- Causes for the Zoonotic disease outbreaks in Africa: The main zoonotic diseases are Ebola and monkey pox.
- According to the World Health Organisation (WHO), there has been an increase of 63% in the number zoonotic infections in Africa between 2012-2022 and 2001-2011.
- Urbanization and the encroachment of natural habitats for wildlife in the region.
- The risk of 'zoonotic diseases outbreaks' has increased with the increasing demand to feed the growing population.
- Improvements in transport infrastructure have removed the natural barriers that poor transportation infrastructure created.
- This has also contributed towards the spread of zoonotic diseases from urban to rural areas.

Topic 27. THOUGH CRITICAL FOR ENTERING 5G RACE, WHY DOES 700MHZ BAND FIND NO TAKERS?

Important for subject: Science and Technology

Dialling up | A total 72 GHz of spectrum worth at least ₹4.3 lakh crore will be put on the block during the 5G auction, scheduled to begin on July 26. Earnest money deposits (EMD) – reflective of the quantity of airwaves a company can bid for in the auction - of all the four applicants seeking 5G radiowaves add up to ₹21,800 crore. Eligibility points are also assigned based on EMD.



| Company | Reliance Jio | Bharti Airtel | Vodafone Idea | Adani Data Networks |
|---|--------------|---------------|---------------|---------------------|
| EMD | 14,000 | 5,500 | 2,200 | 100 |
| Potential worth of bids on auction day | 1.27 lakh | 48,000 | 20,000 | 700 |
| Eligibility points assigned for auction | 1,59,830 | 66,330 | 29,370 | 1,650 |
| Net worth | 1,97,790 | 75,886.80 | -80,918 | 4,979 |
| Last year's EMD | 10,000 | 3,000 | 475 | - |
| Worth of spectrum picked up last year | 57,122.65 | 18,699 | 1,993.40 | - |

ALL FIGURES IN RUPEE CRORES SOURCE: PTI

Awareness of IT 700MHz has been a huge success with telcos due to its many inherent benefits. However, the premium 700MHz band remains unsold due to its high reserve price at the spectrum auction 2021

What is 700MHz and what are its advantages?

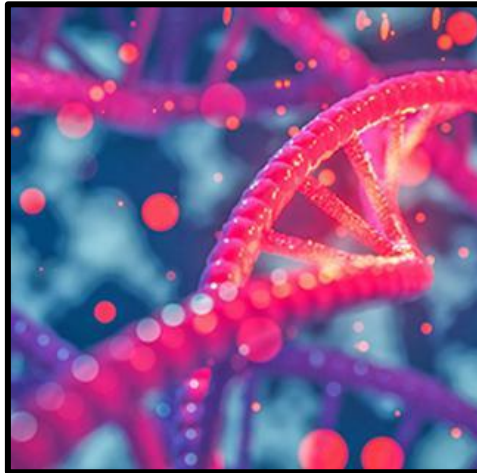
- The 700 MHz band, which is comprised of frequencies between 698 MHz and 806 MHz, is highly sought-after around the globe for rolling out 4G technology to mobile licenses.
- Due to its numerous advantages, such as wide coverage, low frequency, and good penetration in buildings it has been embraced by telcos massively.
- It is five times more efficient than 1800 MHz in rural coverage, and twice as efficient at 900 MHz.
- The 700MHz band is important because of the large Indian population living in villages. Also, mobile technology adoption is increasing.
- Broadband services are significantly more affordable in 700MHz than in 2100MHz, which is nearly 70 percent more expensive.

What is the role of 700MHz in 5G?

- For 5G technology deployments that are cost-efficient, the West's telcos use the 700MHz band extensively.

Topic 28. THE INTELLECTUAL TROIKA THAT HELPED UNDERSTAND HEREDITY

Important for subject: Science and Technology



Biotechnology Mendel stated that information about "traits" is passed from one generation to the next as particulate elements and traits can be traced back in past generations.

- Galton and his backers -- including Karl Pearson and W.F.R. Weldon criticized Mendel for not recognizing ancestors.
- Only the parents, but not other ancestors, are important in determining the character of a person's genetic makeup.
- Galtonian law stated that other ancestors are also important.
- Pearson claimed that the observed correlations between different types of relatives' characteristics were higher than expected by Mendel's laws.
- Mendel's Law of Inheritance.
- **Mendel proposed three laws of inheritance:** Law of Dominance.
- This is also known as Mendel's first law for inheritance.
- The law of dominance states that hybrid offspring can only inherit the dominant trait within the phenotype.
- These are the recessive genes, while dominant traits are the ones that make the trait.
- According to the law of segregation, when a gamete is produced, two copies of each hereditary element are segregated so that each offspring receives one factor.
- This means that alleles (alternative forms of the gene) pair segregate during the formation and fertilization of gametes.
- This is also known by the third law of inheritance, Mendel's.

- Law of Independent Assortment, also known as Mendel's second rule of inheritance, states that a pair of traits can segregate independently of another pair of traits during gamete formation.
- Different traits can occur together because the individual factors of heredity are independent.

Topic 29. FOOD SECURITY FOR MIGRANT WORKERS

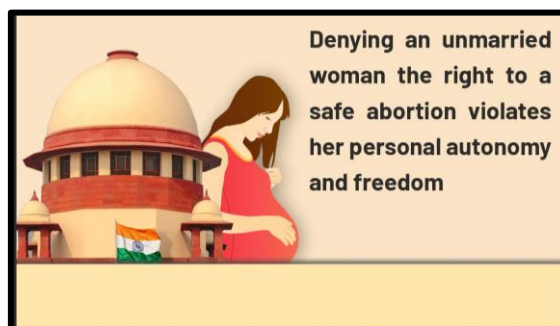
Important for subject: Polity

On Thursday, the Supreme Court informed the Centre and State governments that no one should die from hunger and that food should be delivered to every migrant worker state. This was in accordance with Article 21 of Constitution.

- The Court said that no citizen should starve.
- People without cards should receive rations through the National Food Security Act, or another scheme through the e-shram portal.
- The government plans to register 38 million unorganised workers. This includes construction laborers, migrant workers, domestic workers and street vendors.
- Workers will receive an eShram card containing a 12-digit unique number. This will allow them to be included in social security programs.
- The Labour Ministry, the state governments, trade unions, and CSCs will coordinate the registration of workers through the portal.
- To assist workers who are registering on the portal, a national toll-free number -- 14434 -- is also available.
- A worker can sign up on the portal by using his/her Aadhaar number and bank details.

Topic 30. WOMEN HAVE RIGHT TO SAFE ABORTION: SC

Important for subject: Polity



In a recent order, the Supreme Court ruled that denying an unmarried woman safe abortion rights violates her personal autonomy.

- The law cannot be used to suppress "notions social morality" or unduly interfere with their bodily integrity and personal autonomy.
- The court observed that an amendment to Act 2021 had replaced the term "husband" with "partner", which was a clear indication that the law included unmarried women within its scope.
- The right of a woman to choose her own reproductive options is an integral part of her personal freedom under Article 21 Constitution.
- She is able to maintain her bodily integrity because she has been raised in sacrosanct faith.
- It is clear that the right of women to make reproductive decisions is a dimension of personal liberty'.
- **Article 21:** Protections of life and personal freedom.
- Except as provided by law, no one shall be denied his or her life or personal freedom.
- **Important SC cases regarding Article 21 interpretation:** AK Gopalan case (1950): Article 21 was somewhat narrow in scope until the 1950s.
- The SC ruled that the term "procedure established under law" was used in this case to mean that the Constitution embodies the British concept for personal liberty and not the American 'due process'.
- Maneka Gandhi vs. Union of India Case (1978).
- This case overturned Gopalan's case. The SC ruled that Articles 19 & 21 are not watertight.
- Article 21's concept of personal liberty encompasses many rights.
- Some of these rights are also embodied in Article 19, giving them 'additional security'.
- A court also ruled that Article 21 laws must comply with Article 19 requirements.
- This means that any law-based procedure for the taking away of life or liberty must not be unreasonable, unfair, or arbitrarily applied.
- Olga Tellis against Bombay Municipal Corporation (1985).
- This case reaffirmed the earlier position that any procedure that would violate a person's basic rights must conform to the norms for fair play and justice.
- Based on previous judgments, the Court provided a list of rights that Article 21 covered.
- **These include:** Right to privacy.

- Right to travel abroad.
- Right to shelter.
- Right against solitary confinement.
- Right against handcuffing.
- Right against custodial deaths.
- Right against delayed execution.
- Doctors' assistance.
- Right against public hanging.
- Protection of cultural heritage.
- Right of every child for a full development.
- Right to access to water and medical aid.
- Right to education.
- Protection of under-trials.

**Topic 31. SUPERVISION BY THE SUPREME COURT OVER THE HIGH COURTS:
A CONSTITUTIONAL QUAGMIRE**

Important for subject: Polity

SC stay HC decision

- Except for the appellate power conferred by the Supreme Court, the High Court is not subordinate to the Supreme Court.
- The High Court has a wider power because it can issue writs to infringe all legal rights and also has the power to superintendence over all "subordinate" courts.
- This power of superintendence is not available to the Supreme Court.
- The Supreme Court, being the highest Constitutional Court, was never intended for supervision over subordinate courts or High Courts.
- The Supreme Court is a superior court because it is the highest appeals court, the law it declares is binding on all Courts, and it can transfer cases from one High Court or to itself.
- Article 144 also requires that all authorities, including the High Court, act in support of the Supreme Court.
- The power to appeal means the power to cancel, reverse, annul, or modify any decree of the High Court, including the direction of hearing the matter and following all directions that may be included in the order of remand.

- This appeal power includes the power to exercise any other incidental or additional powers.
- Article 227 conferred a power on the High Court that required it to maintain the authority of inferior courts and tribunals within their limits and ensure they do not exceed them.
- This included ensuring that such courts or tribunals perform duties in accordance with the law giving such powers.

Topic 32. NO PLAN TO BRING DOWN FISHERIES SUBSIDIES: GOVT IN LOK SABHA

Important for subject: Government Schemes

FISHY TALKS
India rejects fish subsidy text, no level playing field for poor nations

Developing nations want end to sops for distant water fishing for 25 yrs

India gives \$15 annual subsidy per fish family vs \$75,000 by rich nations

Current text will institutionalise disparity, India says

Policy space key for poor fisherfolk's live-lihood, sustainable growth

It is necessary to open the eyes of this august assembly to the deep concerns of the low-income countries and the developing world and...to the huge disparity sought to be foisted on us once again like it was done in agri 35 years ago

Piyush Goyal
Commerce & industry minister

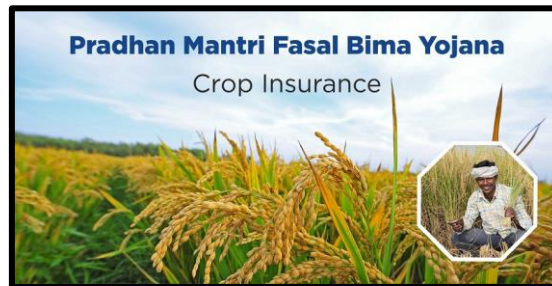
India has sought the extension of a transition period for 25 years in the fisheries sector, arguing that it in the country needs government assistance as millions of fishermen in coastal regions still depend on small-scale fishing to earn their livelihoods.

- Subsidies are provided to purchase and upgrade their small fishing vessels as well as to purchase equipment for the vessels, and for insurance costs the government declared the Fisheries Sector in India.
- The Fisheries Sector is the main source of income for a variety of communities.
- India ranks as the 2nd largest producer of fish by aquaculture in the world.
- India is the fourth biggest exporter of seafood worldwide due to its contribution of 7.7 percent to global production of fish.
- Fisheries are the country's single-largest agricultural export, having an increase of between 6 and 10 percent over the last five years.
- At present, this sector offers the livelihood of more than 2.8 million people across the country.
- However, it is an industry with yet to be explored potential.

- The fisheries sector has demonstrated double-digit annual average growth of 10.87 percent since 2014-15, with record production of 145 tonnes during 2020-21, as per the Economic Survey for 2021-22.
- Despite the challenges in infrastructure and infrastructure, the policies of the Central government in few years have ensured that the fishing industry maintained an annual rate of growth of over 10 percent.
- **Pradhan Mantri Matsya Sampada Yojana (PMMSY):** Pradhan Mantri Matsya Sampada Yojana (PMMSY) was launched on 10th September 2020.
- The goal of the program is to achieve a Blue Revolution through the sustainable expansion of the fishing industry over 5 year (2020-2025.)
- PMMSY was revealed in the union budget 2019-20.
- It is estimated to cost of the equivalent of. 20,050 crores in its implementation for a time period of five years starting from FY 2020-21 until FY 2024-25 across all States and UTs in the Aatma Nirbhar Bharat Package.
- PMMSY seeks to boost production of fish by another 70 lakh tonnes between 2024 and 25 increasing the export earnings of fisheries to Rs.1 million, 000 crore in 2024-25.
- It aims to increase the incomes of fishermen and fish farmers, and reducing post-harvest losses between 20-25% and 10%, and creating job opportunities that are lucrative within the sector.
- PMMSY: PMMSY is a broad scheme with two distinct Components which are (a) Central Sector Scheme (CS) and (b) Centrally Sponsored Scheme (CSS).
- The Centrally Sponsored Scheme (CSS) Component is further segregated into No beneficiary oriented and beneficiary orientated subcomponents/activities under the following three broad heads: Enhancement of Production and Productivity Infrastructure and Post-harvest Management Fisheries Management and Regulatory Framework

Topic 33. THE ANDHRA PRADESH GOVERNMENT HAS DECIDED TO REJOIN THE AMBITIOUS PRADHAN MANTRI FASALBIMA YOJANA (PMFBY)

Important for subject: Schemes



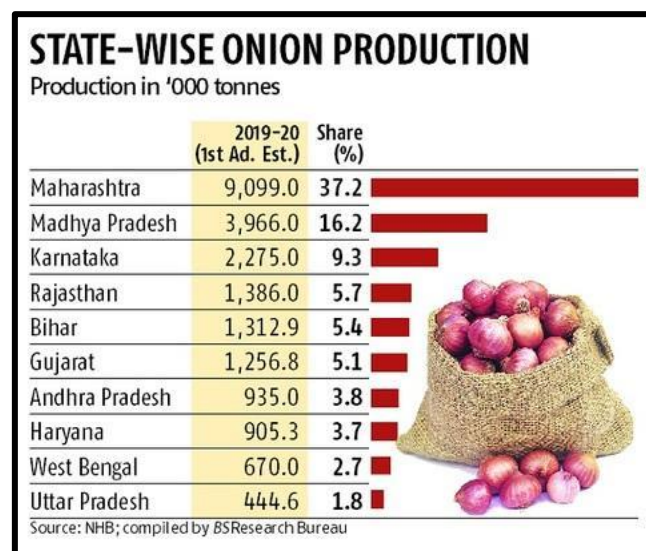
After rolling back previous insurance schemes, viz. National Agriculture Insurance Scheme, Weather-based Crop Insurance Scheme and Modified National Agricultural Insurance Scheme.

- **Premium:** This premium is a uniform premium that farmers will pay for Kharif crops and 1.5% for Rabi crops.
- The premium for annual commercial crops and horticultural crops is 5%
- This scheme was created as a landmark initiative to offer a comprehensive risk solution for farmers at the lowest uniform premium in the country.
- States and GoI equally subsidise premium costs above and beyond the farmer share.
- To encourage the uptake of the North Eastern States, GoI receives 90% of the premium subsidy.
- **Coverage of Risks and Exclusions:** The scheme covers the following stages of the crop as well as risks that could lead to crop loss.
- **Prevented Sowing/Planting Risk:** An area that is not covered by insurance cannot be sow/plant due to a lack of rainfall or other adverse seasonal conditions.
- **Standing Crop (Sowing and Harvesting):** Comprehensive Risk Insurance is offered to protect yields from non-preventable risk, viz.
- Drought, Dry spells Flood, Inundation Pests and Diseases Landslides Natural Fire and Lightning Storm, Hailstorm Cyclone Typhoon Tempest Hurricane Tornado
- **Post-Harvest Losses:** Insurance is only available for crops that are left in cut and spread conditions after harvesting.
- It protects against the specific perils of cyclones, cyclonic rains, and unseasonal rainfalls.

- Localized Calamities Loss/ Damage resulting from identified localized risks such as hailstorm, land slide, and inundation that affect isolated farms within the notified region.
- **Companies:** Agriculture Insurance Company Cholamandalam MS General Insurance Company Reliance General Insurance Co. Ltd.
- Bajaj Allianz Future Generally India Insurance Co. Ltd.
- HDFC ERGO General Insurance Co. Ltd.
- IFFCO Tokyo General Insurance Co. Ltd.
- Universal Sompo General Insurance Company ICICI Lombard General Insurance Co. Ltd.
- Tata AIG General insurance Co. Ltd.
- SBI General Insurance United India Insurance Co

Topic 34. INCREASED ONION STOCK TO REGULATE PRICES: CENTRE

Important for subject: Schemes



Areas Zones of Cultivation The main onion-producing states include Maharashtra, Karnataka, Madhya Pradesh, Gujarat, Bihar, Andhra Pradesh, Rajasthan, Haryana and Telangana.

- Maharashtra is the first country to produce Onion with a share of 28.32%.
- Climate Onion can be grown in a temperate climate, but it can also be grown in tropical or subtropical climates.
- You can get the best performance in mild weather, which is free from extremes like heat and rain.
- Good growth requires 70% relative humidity

- It can be grown in areas where there is an average annual rainfall of 650-750mm and good distribution during monsoon periods.
- Rain-fed crops are not suitable for areas with low rainfall (650 mm) and heavy rain (>750mm).
- Soil Onion can grow in any soil type, including sandy loam or clay loam.
- The best soil to cultivate onions is deep, friable loam, alluvial soils that have good drainage and moisture holding capacity.
- In 2019, China was followed by India and the United States as the largest onion producer in the world.
- The Department of Consumer Affairs has maintained an onion buffer under the Price Stabilization Fund, (PSF), with the goal of effective market intervention to moderately price. Key Points
- **About PSF:** Founded in 2014-15, the PSF fund was created to absorb extreme volatility at certain commodity prices.
- These goods will be purchased directly from farmers/farmers' organizations at the farm gate/mandi and made available to consumers at an affordable price.
- All losses between the Centre, the states, and the Centre must be shared in the operation.
- The fund's money is used to purchase and distribute certain goods as appropriate, in order to maintain a reasonable cost range.
- **Provides Loans:** The PSF Scheme provides interest-free loans to State Governments/Union Territories and Central Agencies in order to fund their working capital and other expenses that may arise from the distribution and procurement of these commodities.
- The Ministry of Agriculture & Farmers Welfare transferred the PSF scheme to the Ministry of Consumer Affairs, Food & Public Distribution w.e.f. April 1, 2016.
- **Fund Management:** This fund is centrally managed and approved by the Price Stabilisation Fund Management Committee, (PSFMC).
- Maintenance of the Corpus Fund: Small Farmers Agribusiness Consortium, (SFAC), a society that is promoted by the Ministry of Agriculture and Farmers'.
- Welfare to link agriculture to investment, private companies, and technology.
- The PSF is a central corpus fund.

- **Related Scheme:** Operation Green (OG), launched in 2018 by Ministry of Food Processing Industries, aims to create value chains of Tomatoes, Onions and Potatoes (TOP), following the model of "Operation Flood (AMUL model for milk) and in such a manner that a greater share of the rupee goes directly to farmers and stabilizes prices.
- During the presentation of the Union budget 2021 the government announced Operation Green (OG), which will be expanded beyond TOP and 22 perishable commodities.

Topic 35. DALAI LAMA VISITS LADAKH

Important for subject: International relations



Buddhists believe that the Dalai Lama, as per Buddhist belief, can choose the body in which he reincarnates.

- This person will be the next Dalai Lama if they are found.
- Buddhist scholars believe that it is the duty of the Gelugpa tradition's High Lamas and the Tibetan government, to find and select the next Dalai Lama after the death of an incumbent.
- If more than one candidate has been identified, officials and monks draw lots during a public ceremony to find the true successor.
- After being identified, the successful candidate is taken with his family to Lhasa (or Dharamsala), where the child studies Buddhist scriptures to prepare him for spiritual leadership.
- China claims that there was a process for recognising the reincarnation or the Dalai Lama.

- One condition was that the successor's name was drawn from the Jokhang Temple (one the most sacred monasteries in Tibetan Buddhism located in Lhasa) as well as the Potala Palace, which was the home of the Dalai Lama until he fled to India, in 1959.
- The second was that of the reincarnation, which received the approval from the Chinese government.
- Dalai Lama Dalai Lama, a title that the Tibetan people have given to the most prominent spiritual leader of Gelug (or "Yellow Hat") Tibetan Buddhism, is the newest school of Tibetan Buddhism.
- Tenzin Gyatso is the 14th Dalai Lama.
- The Dalai Lama are believed to be manifestations Avalokiteshvara and Chenrezig, the Bodhisattva Compassionate and patron saint of Tibet.
- Bodhisattvas, realized beings who desire to achieve Buddhahood for all sentient beings and have vowed that they will be reborn in this world to benefit humanity, are called Bodhisattvas.

Topic 36. INCHEON DECLARATION

Important for subject: International Relations

The Incheon Declaration, which was adopted at the 2015 World Education Forum (WEF) in Incheon, Republic of Korea on 21 May 2015, was adopted.

- The Incheon Declaration is the commitment of the education community towards Education 2030 and 2030.
- Agenda for Sustainable Development recognizes the importance of education as a major driver of development.
- The Incheon Declaration is a continuation of the global Education for All movement (EFA), which was established in Jomtien in Thailand in 1990, and reaffirmed in Dakar, Senegal, in 2000.

Topic 37. NORD STREAM 1 PIPELINE SHUTS DOWN AMID GERMAN SUSPICION OF RUSSIA

Important for subject: International relations



Gazprom, Russia's energy giant, owns Nord Stream, the longest subsea gas pipeline. It is an export pipeline that runs under the Baltic Sea and carries gas from Russia to Europe. Nord Stream's gas comes mainly from the Bovanenkovo gas condensate and oil deposit in Western Siberia. It bypasses transit countries and is therefore highly reliable for European customers. This is the reason why this pipeline is so important.

What is the Nord Stream Pipeline?

- Nord stream is made up of two pipelines that each have two lines.
- Nord Stream 1 was finished in 2011. It runs from Vyborg, Leningrad to Lubmin in Greifswald, Germany.
- Nord Stream 2, which runs from Ust-Luga, Leningrad, to Lubmin, was completed in September 2021. Once it is operational, it will be able to handle 55 billion cubic metres of gas annually.
- Together, the twin pipelines can transport 110 billion cubic meters (bcm), of gas per year to Europe for at most 50 years.
- The Nord Stream crosses several countries, including Russia, Finland and Sweden. It also crosses the Exclusive Economic Zones of Germany (EEZs).
- The pipeline connects to Germany's OPAL (Baltic Sea Pipeline), and NEL (North European Pipeline), which connects to Europe.

Topic 38. HARELA

Important for subject: History

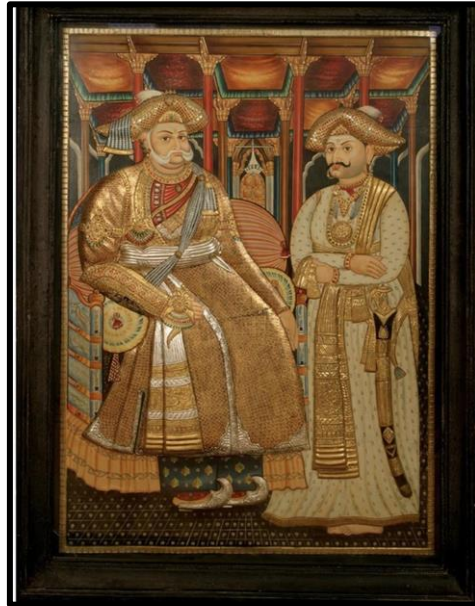


Biotechnology Mendel stated that information about "traits" is passed from one generation to the next as particulate elements and traits can be traced back in past generations.

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- Law of Independent Assortment, also known as Mendel's second rule of inheritance, states that a pair of traits can segregate independently of another pair of traits during gamete formation.
- Different traits can occur together because the individual factors of heredity are independent.

Topic 39. 19TH CENTURY PAINTING OF RAJA SERFOJI, SON STOLEN FROM THANJAVUR SARASWATHI MAHAL TRACED TO U.S. MUSEUM

Important for subject: History




The Maharaja Serfoji II was one of the ancestors of the Bhosle Dynasty. He was the ruler of the rule of the Maratha principality of Thanjavur from 1798 to 1832. Thanjavur was a victim of Lord Dalhousie's famous "Doctrine of Lashes" and it was in the Britain-ruled Indian provinces.

- Doctrine of Lapse Doctrine of Lapse Doctrine of Lapse was an Annexation policy that was widely followed by Lord Dalhousie during his time as India's Governor-General between 1848 and 1856.
- As a result any princely state that falls with directly or indirectly (as vassal) control of the East India Company where the ruler was not able to establish an heir legal to the kingdom was annexed to the company.
- According to this the adoptive son or daughter of an Indian ruler would not be declared the heir of the kingdom.
- This caused a rift in it to challenge the Indian ruler's long-held power to select an heir of their own choice.
- States that are annexed to the theory Satara, Jaitpur, Sambalpur, Baghat, Udaipur, Jhansi, Nagpur, Awadh

PIONEER ACADEMY

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THANE



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



DADAR Address :
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ANDHERI



ANDHERI Address :
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KALYAN



KALYAN Address :
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