

WEEKLY CURRENT AFFAIRS MAGAZINE for

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

DECEMBER-VOL-I-2022

1 December to 7 December



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Topic 1. AMAZONIAN BIODIVERSITY: INDIGENOUS CONVOY TO BRING FOCUS TO THREATS DURING MONTREAL SUMMIT

Important for subject: Environment



A delegation of Indigenous Amazonians will participate in the upcoming 15th Conference of the Parties for the United Nations Convention for Biological Diversity.

- The CoP15 meeting of the CBD in Montreal, Canada.
- COP15 - CBD is an international conference that brings together governments from all over the globe. Participants will establish new goals that guide global action towards preserving biodiversity by 2030 in order to reverse and stop the loss of nature.
- The focus would be on extractive industries. Particularly, mining and fossil fuels are threatening the Amazon rainforest's biodiversity and human rights throughout the biome.

Amazon rainforest

- 30% of all species are found in the Amazon rainforest. It contains 40,000 species of

plants, 16,000 tree species and 1,300 birds.

- It is the largest tropical rainforest on the planet and the source of 20 percent of the oxygen used by the planet.
- One in five species of fishes and birds are found in Amazonia.
- The Amazon rainforest is home to between 400 and 500 indigenous Amerindian tribes.
- It is extremely dark because of the low amount of sunlight reaching the forest floor.
- 20% of the Earth's land area, which contains 82% of the remaining biodiversity in the world.

Threats to Amazon Rainforest

1. Natural threats
2. Anthropogenic Threats
3. El Nino Southern Oscillation
4. Smuggling and biopiracy
5. Deforestation
6. Commercial fishing
7. Global temperature rise
8. Cattle ranching
9. Droughts and forest fires
10. Extraction and mining
11. Not suitable for sustainable agriculture Damming or logging
12. The tipping point
13. Poaching

Topic 2. LOSS, DECAY AND BLEACHING: WHY SPONGES MAY BE THE 'CANARY IN THE COAL MINE' FOR IMPACTS OF MARINE HEAT WAVES

Important for subject: Environment

The marine sponges are thought to be more resistant to ocean warming than any other organisms. New Zealand had the largest ever sponge bleaching event off its southern coast earlier this year.

About sponges

- Like corals, sponges contain symbiotic organism, *Cymbastella lamellata* is unusual in that it hosts dense populations of diatoms, small single-celled photosynthetic plants that give the sponge its brown colour.
- These diatoms are found within the sponge tissues, exchanging food to protect them.
- The sponge's bleaching process releases the diatoms and exposes the sponge skeleton.
- Tissue loss happens when sponges become stressed. They either need to spend more energy on cell repair or if their food source is low. In order to reduce their body volume and reallocate their resources, they reabsorb the tissue from their bodies.
- The development of pathogenic bacteria and changes in the microbiome within sponges is usually associated with tissue decay.

Significance for sponges

- Sponges, one of the oldest and most abundant animals found on rocky reefs around the globe, are.
- They filter large amounts of water and capture small food particles. Carbon is then moved from the water column to seafloor, where it can be eaten.
- These invertebrates can be eaten by organisms higher up the food chain.
- This habitat is available to a variety of other species, such as starfish, shrimps, and crabs.

Sponge bleaching

- The bleaching was observed along the Newzealand's southern coast, but not in the central regions of New Zealand.
- A prolonged heat wave in the oceans affected one species, the cup sponge *Cymbastella Lamellata*
- A maritime heat wave refers to an event in which seawater temperatures exceed the seasonal-varying threshold for at most 5 consecutive days.
- Any subsequent heatwaves with gaps less than 2 days are also considered part of the same event.

Topic 3. A DANGEROUS PESTICIDE ISN'T BEING MONITORED IN KEY BIRD OF PREY POPULATIONS — WE'RE SHEDDING LIGHT ON THAT GAP

Important for subject: Environment

DDT has been known for its destructive effects on the environment and animal and human health.

DDT

- It was used for the first time in the second world conflict to protect Allied soldiers from malaria and typhus. These diseases are spread by body lice and mosquitoes. This miracle chemical is often called the "miracle chemical".
- Paul , a Swiss Chemist, discovered its insecticidal qualities in 1939
- Hermann Mullerand was awarded a Nobel Prize for Medicinefor his discovery of DDT's uses.
- It was widely used to kill pest crops and other insects that can cause disease in humans.
- Continued exposure can lead to neurological damage, reproductive problems, and endocrine disorders in both humans as well as animals.

Awareness of the harmful effects of DDT

- Silent Spring by Rachel Carson, published 1962.
- Silent Spring raised awareness about DDT's environmental effects and caused a public outcry. This led to a ban on DDT use in many parts of the developed world, the "global north", during the 1970s and 1980s.
- Over 90 countries adopted the Stockholm Convention on Persistent Organic Pollutants in 2004. These are substances that remain in the environment for long periods after they have been used.
- DDT was one of the most harmful pesticides, industrial chemicals and by products that were placed on the conventions "dirty dozen" list. It was banned in almost all parts of the globe.
- The World Health Organization recommended that DDT be limited in order to control malaria two years later.
- It is still in use in many tropical countries of Asia, Africa, South and Central America.

- The human and raptors' health are at risk from its use.
- Birds-of-prey as sentinels
- They are at the top of the food chain and can serve as an "ecological indicator", which helps us to gauge the health of our environment.
- They are valuable indicators species and provide valuable ecosystem service. This includes controlling pest animals like rodents, and removing carrion from their environment. This could potentially reduce the spread of diseases.
- Many raptor species were almost exterminated by DDT, which accumulates in wildlife and increases the food chain.
- This bio-accumulation can be used to monitor DDT levels in the environment.
- Raptors could be considered sentinels for DDT.

A global north bias

- DDT Monitoring in Raptors is heavily biased towards the global north. 95% of samples are from North America and Europe.
- This is concerning because the majority of DDT usage is currently in the Global South. Most raptor species are also affected by this.
- Only three species make up half of all the raptor specimens collected: Eurasian sparrow hawk, bald eagle and peregrine falcon.
- Only the peregrine falcon is found on all continents. However, they have been far more frequently seen in Africa, Asia, Central, and South America than Europe or North America.
- Although the Eurasian sparrow hawk can also be found in Asia, it is much less common than in Europe.

It's concerning for three reasons:

- Because of its role in malaria control, the current DDT usage is in global South.
- This region is home to the majority of world's raptors. These regions also have many species declines.
- Many countries of the global south are known for being poor at enforcement of environmental laws.

Topic 4. RICE, INTEGRAL TO MADAGASCAR, MAY BE HASTENING THE DECLINE OF ITS UNIQUE BIODIVERSITY; HERE IS HOW

Important for subject: Environment



Rice, the primary food crop in Madagascar, could accelerate the deforestation and reduction of biodiversity on the fourth-largest Island of the globe due to shifting agriculture according to two extensive studies published in Science journal.

- Study named- Madagascar's extraordinary biodiversity: Evolution distribution and use
- Climate change is causing havoc to the island, the most recent being Tropical Storm Ana earlier in the year.

Zebu cattle and rice

- The Rice cultivation was brought to Madagascar by Austronesian settlers a millennium back.
- Rice forms an integral part of Malagasy food. Each Madagascan consumes approximately 120 kilograms or more rice per year.
- Landscape change in Madagascar
- Rice can be cultivated in both the Central Highlands and the humid eastern, where Spiden agricultural methods (ie. shifting cultivation which involves clearing forest for conversion into cropland) are widely used.
- Slash-and-burn cultivation depleted soils rapidly.
- Farmers were forced to leave their land and clear the vegetation at a new site.
- The island's deforestation was primarily due to agriculture. In 2014, 44% of the island's land that was covered in native forest in 1953 had been deforested.

- The rate of deforestation has been steadily increasing.
- It was 99.0 Kilohectare annually between 2010-2014 and 72.9 Kha/per annum from 2014-2020.
- The global pattern of deforestation in Madagascar is reflected in the large-scale, but still widespread practice of swidden farming (also called shifting cultivation; in Madagascar it's referred to as "tavy" for rice cultivation in humid and/or subhumid areas, and "hatsake" for maize and cassava in dry and subarid regions.
- Cash crop production, especially peanut and maize, has been a significant driver of deforestation, as well as the production of products for international market, like forest-derived vanilla.
- Natural system Modifications add to deforestation.
- They are a threat to 23.2 percent of vertebrates, and 68.1 per cent plants.
- Some forecasts indicate that if there is no effective strategy to combat deforestation, 38-93% of the forest in 2000 may be gone by 2050.
- Madagascar is a biodiversity hotspot
- The island is home to many animals, plants, and insects that are not found anywhere else in the world.
- 56% of island's birds, 81% of freshwater fishes and 95% of mammals are endemic.
- Madagascar, together with India, was a part of Gondwana. One of supercontinents formed millions years ago.
- South America, Africa, and Australia were all part of the great landmass.
- Later, Madagascar split and moved until it reached its current position in the Indian Ocean. It is separated from Africa by Mozambique Channel.
- Its relative isolation allowed for high levels of endemism among its fauna.

Topic 5. THE GREAT BARRIER REEF IS 'IN DANGER': AUSTRALIA PUSHES BACK

Important for subject: Environment



The International Union for Conservation of Nature and UNESCO's World Heritage Centre shared concerns about the Great Barrier Reef's (GBR), in Australia. They recommended that it be "inscribed on the List of World Heritage In Danger."

What is the IUCN-WHC Report?

- Two scientists were part of the panel that made 10 priority, and 12 more recommendations to preserve the "Outstanding universal Value" (OUV) of the coral reef system.
- Climate change has significantly adversely affected the GBR, affecting its ability to sustain itself and regenerate.
- Many reefs have been made sterile by frequent bleaching events.
- A particular danger is the degraded water quality.
- Management of the property does not have clear goals for climate change.
- Implementation of the GBR plans for conserving the has been a failure, particularly in relation to the management of water quality as well as fishing activities.
- GBR's water quality is particularly affected by inshore land-based activities that are often not within the protected area.
- The pollutants resulting from construction and agricultural activities are harmful.

The report's suggestion-

- Addition of the GBR to List of World Heritage in Danger
- Monitoring and changing farming practices
- Increased commitments to reduce greenhouse gas emission
- The coast is the most vulnerable area for land erosion.
- Sustainable fishing practices

What does it mean to place GBR on the List of World Heritage in Danger?

- The List of World Heritage in Danger was created to alert the international community of threats to the characteristics that made a property on the World Heritage List. It also encourages corrective actions.
- The 1972 World Heritage Convention allows inscribing sites to the List to allow the WHC and the World Heritage Fund immediate assistance to the endangered property while simultaneously attracting international attention to the site.
- UNESCO has difficulty enforcing any of its recommendations. Being on the list invites greater scrutiny.
- This list could have an impact on all types of development projects and be very politically important for governments.

What is the Great Barrier Reef?

- The GBR, located off Queensland, Australia's coast, is the largest coral reef system in the world, with more than 2,900 reefs and 900 islands, and an area of approximately 344,400 kilometres.
- The GBR is both a biodiversity hotspot and a major carbon sink.
- Australia's GBR has been a key contributor to the economy. It supports over 64,000 job and generates billions annually.
- To protect the property from exploitation, up to 99 percent of it is located within the GBR Marine Reserve.
- It is managed as a multi-use area, with various commercial and tourist activities allowed.

Management Of Great Barrier Reef (GBR).

- Zoning plans are the foundation of GBR management. They determine what is allowed and where.
- The Queensland Government manages the land use and development activities in the coastal and water catchments that are adjacent to the property.
- Traditional marine resource activities are used by Aboriginal people to provide traditional food and practice their maritime culture. They also educate the younger generation about cultural and traditional rules and protocol. They are the most important custodians in GBR.

Understanding Australia's Response

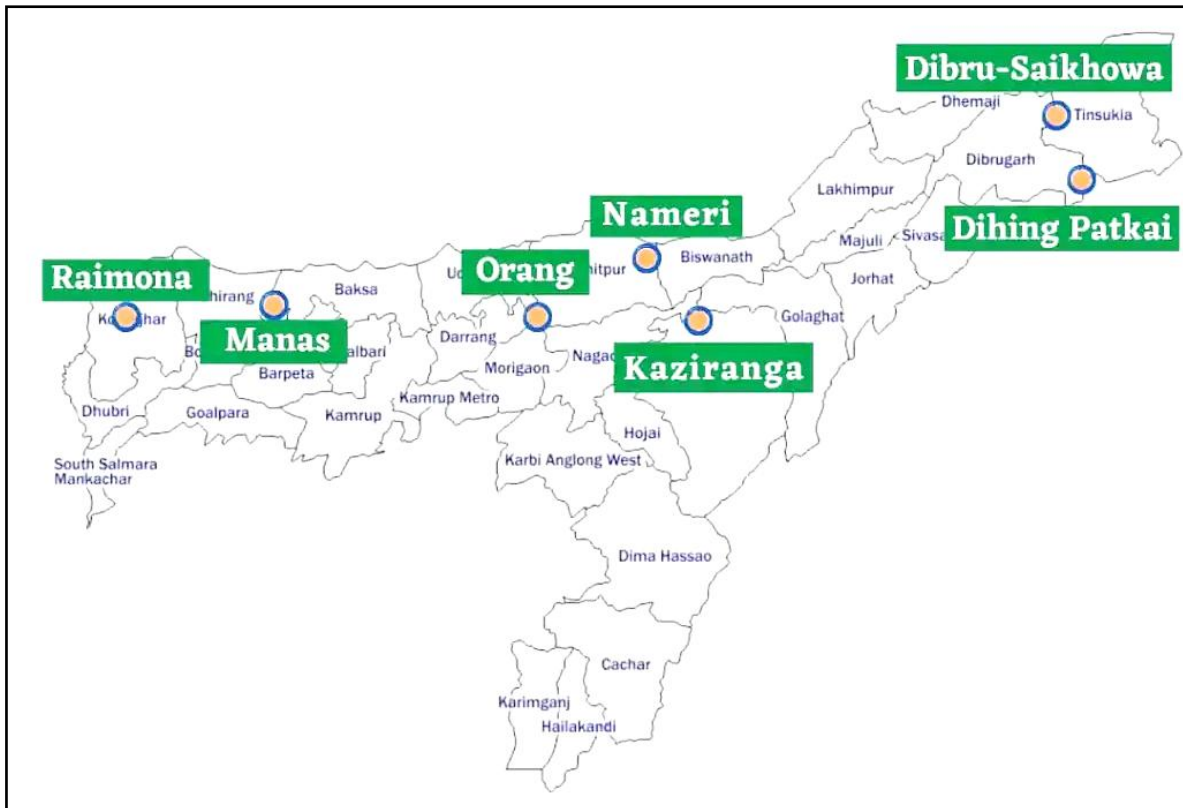
- Australia would need to make significant investments to compensate the fisheries that rely on this method if it were to follow the panel's recommendation to eliminate "gillnet fishing" which indiscriminately harms the marine life.
- It could also lose the political goodwill amongst Queensland's fishermen.

What is the List of World Heritage at Risk?

- The United Nations Educational, Scientific and Cultural Organization
- The list of World Heritage in Danger is compiled by the UN Educational, Scientific and Cultural Organization (UNESCO).
- The List includes world heritage sites threatened by natural disasters, armed conflict, wars and pollution.
- UNESCO maintains the World Heritage Sites listing sites that are of exceptional cultural or physical value and which are of extraordinary human benefit.
- The World Heritage Convention states that the World Heritage Committee, which administers the Convention, adds World Heritage Sites on the danger list to those sites that meet one of the criteria below.

Topic 6. IN KAZIRANGA, INDO-FRENCH PARTNERSHIP BEARS FRUIT

Important for subject: Environment



Kaziranga is part of the larger Assam Project on Forest and Biodiversity Conservation, (APFBC). The Agence Francaise de Developpement has committed funding for EUR80.2 million over a 10-year period from 2014-2024.

- Actions to be taken under Indo-French Initiative at Kaziranga National Park, Assam Artificial Highlands which animals can escape from floods; engagement and alternative livelihood training for them biodiversity conservation- Reforestation of 33.500 hectares , Wildlife Management (457sqkm Kaziranga National Park
- One of the major causes of forest degradation around the reserve is the illegal timber trading.
- Kaziranga has adopted the "protection Strategy". It involves the establishment of 223 antipoaching camp across the park.
- In various locations around the park, there are 35 6-foot tall embankments and highlands that animals can climb on to seek refuge from the annual flooding.
- Infrared-based early warning systems have also been developed by the project. These

are triggered when elephants step on land to warn or scare away herds.

About Kaziranga national park-

- Kaziranga National Park is India's oldest protected area.
- It is located at Golaghat, Nagaon, within the Karbi Anglong District of Assam.
- The forest department of Assam State Government manages the park.
- History Kaziranga National Park
- Mary Curzon decided to declare the area protected with her husband Lord Curzon, after failing to find a rhinoceros within the area.
- Year Description 1905 Established as Kaziranga Proposed Reserve Forest.
- 1950 Renamed Kaziranga Wildlife Sanctuary
- 1974 The Government of India declared this area a National Park. The park's area had grown to 430 km from its original 232 km.
- 1985 UNESCO designated Kaziranga National Park a UNESCO World Heritage Site. It is home to approximately 2/3 of the world's rhinoceros population.
- 2006 The Indian Government declared it a Tiger Reserve following the decline in the Tiger Population. It now has one of the largest concentrations of tigers worldwide.
- There are also elephants, swamp deer and wild water buffalo in the park. There is also a large variety of flora.
- It is also home to 15 endangered species of fauna. It's also home to many big cats, including leopards and Bengal Tigers.
- There are approximately 2413 Rhinos in the park.
- The Indian Government selected Kaziranga National Park as one of the 17 Iconic Tourism Sites for the country in March 2020.
- Through the parking lot, you will find the National Highway 37.
- Kaziranga National Park is home to 250 and seasonal water bodies along with the Diphlu River.
- Kaziranga also houses 9 of the 14 primates that are found in the Indian subcontinent.

International Status :

- In 1985, it was designated a UNESCO World Heritage Site.
- BirdLife International has designated it as an Important Bird Area.

Topic 7. GREEN CUSTOMS INITIATIVE

Important for subject: Environment

The Green Customs Initiative, launched in 2004, is an unprecedented informal partnership of international organisations cooperating to prevent the illegal trade in environmentally-sensitive commodities and substances and to facilitate legal trade.

- Its purpose is to improve the ability of customs officers and other border control officers to facilitate legal trade, and to detect illegal trade in environmentally sensitive commodities that are covered by relevant conventions or multilateral environmental agreements (MEAs).
- These commodities include toxic chemicals, hazardous materials, endangered species, and living-modified animals.
- This is done through awareness-raising about all international agreements, as well as providing assistance and tools for the customs community.
- Green Customs Initiative aims to enhance and complement existing customs training efforts in accordance with the respective agreements.
- Through its umbrella partnership, which includes multiple organisations with different mandates, the Green Customs Initiative offers opportunities for coordinated cost-effective development of tools and delivery training and awareness-raising to customs officers and border control officers.
- Customs agencies often request and need coordinated training, such as the Green Customs Initiative.
- This type of coordinated training cannot be provided by any other means.

Topic 8. BASEL CONVENTION

Important for subject: Environment

The Basel Convention on the Control of Transboundary Movements of Hazardous Wastes (and their Disposal) was approved 22 March 1989, by the Conference of Plenipotentiaries Basel, Switzerland.

- The goal of the Basel Convention at the time it was adopted was to fight "toxic trading".
- 1992 saw the entry into force of the Convention.

- India is a signatory of the Basel Convention

Objective-

- To protect human health and our environment from the harmful effects of hazardous wastes.
- It can be applied to a broad range of hazardous wastes based on their origin,/or composition, and their characteristics. There are also two types of other wastes - household waste or incineratorash.

Goals and provisions

- Reduced hazardous waste generation, promotion of environmentally sound waste management wherever it is disposed; limitation of transboundary movement of hazardous materials except where it can be considered to be in compliance with the principles and practices of environmentally sound managing; and regulatory system for cases where transboundary movements are permitted.
- Illegal traffic, according to the Basel Convention is defined as transboundary movement hazardous wastes.
- Without notification to all concerned States; without consent from a state concerned; through falsification, misrepresentation, fraud; that is not in conformity in a material manner with the documents; or that results (e.g. The Convention and general principles of international legal law are not to be violated by the dumping of hazardous wastes.

Topic 9. STOCKHOLM CONVENTION

Important for subject: Environment

Objective:

- The Stockholm Convention on Persistent Organ Pollutants (POPs)
- The Stockholm Convention was adopted in 2001. It prohibits or severely restricts the production, trade and use of 12 POPs, also known as the "dirty twelve."
- These chemicals are not manufactured or used anymore in industrialized nations. However, POPs can still cause serious health problems for people living hundreds of miles from the source.

- The Stockholm Convention includes provisions regarding the treatment and disposal of POPs wastes. The Stockholm Convention also includes procedures for listing any additional POPs that might be severely restricted or banned.
- India is a signatory of the Stockholm Convention

Topic 10. ROTTERDAM CONVENTION

Important for subject: Environment

The Convention imposes legal obligations on the parties to the Prior Informed Consent (PIC), procedure.

- It was created using the voluntary PIC procedure that UNEP and FAO initiated in 1989. The process was halted on 24 February 2006.
- The Rotterdam Convention has two main goals: to encourage shared responsibility and cooperation among Parties in international trade of certain dangerous chemicals to protect human health from potential harm; and to contribute to the environmental sound use of these hazardous chemicals by encouraging information exchange about their characteristics and providing for a national process to determine their import and export, and disseminating those decisions to Parties.
- The Convention encourages the exchange information on a wide range of chemicals.
- It does this by: the obligation for a Party of notifying other Parties about each country ban or severe restriction on a chemical; the possibility that a Party which is in transition can inform other Parties that its Party is suffering from problems caused in part by a highly hazardous pesticide formulation; the requirement that a Party intends to export a chemical that is prohibited or severely restricted for use within their territory to notify the importing Party; the safety data sheet to be sent to the party; and the labelling requirements for chemicals that are included in the PIC procedure;

Topic 11. RHINO CONSERVATION

Important for subject: Environment



Poachers are now more of a threat to invasive alien plant species than poachers in rhino habitats in India or Nepal.

- Kaziranga was home to about one horned rhino when it became a protected area.
- The State of Rhino Report 2022 estimates that the Kaziranga population of poor-sighted herbivores is 2,613, which is more than 65% of the total 4,014 in 11 habitats in India, Nepal. These domains were home to 2,454 rhinos a decade ago.
- The Antipoaching Mechanism in India, Nepal, with more manpower, capacity-building of frontline staff, and equipping forest guards, has helped to protect the rhino.
- The sentiments of local people attached rhinos to them have also contributed to the sharp decline in rhino deaths, which fell from 54 in 2013 to 2014 to one in 2021 to one in 2022.

Topic 12. ELEPHANT CONSERVATION

Important for subject: Environment

Recently, Nandini, the matriarch of weight lifting and champion, was struck by a train. She died at the Coimbatore Railway Station in Tamilnadu.

- India is home to nearly 60 Asian elephants, and the latest count in 2017 put the species at 29,964.
- Although the population of elephants has been increasing in India over the last few years, it is still listed as endangered on the IUCN Red List and Schedule I of the Wildlife Protection Act.
- Nearly 44% of India's elephant population lives in the South Indian States of Karnataka and Kerala.
- The number of Indian elephant reserves is 32 with the most recent addition being Agasthyamalai Elephant Reserve in 2022.

Challenges:

- Persisting threat of poaching for ivory
- Conflict with humans – On average, approximately 500 people and 100 animals are involved in conflicts.
- These confrontations result in the death of many elephants every year.
- Fragmentation of Elephant Habitats
- Construction of lines (railways, roads) and power infrastructure Change of land use, especially bringing in former forested areas under cultivation.

Project Elephant

- In 1992, the Ministry of Environment, Forest and Climate Change launched this scheme.
- Our goal is to ensure long-term survival of elephants in their natural habitats.
- Project Elephant also aims to support the research on elephant ecology and management, raising awareness about conservation among local residents, and providing better veterinary care to captive elephants.
- This strategy is mainly implemented by 16 of the 28 states or union territory within the country.

- There are currently about 101 elephant corridors in the country that need to be protected for elephant conservation.

Topic 13. CHEETAH

Important for subject: Environment

This year saw the arrival of Namibian Cheetahs in India. It was the first intercontinental transfer for wild cats to India since independence.

- Eight cheetahs from Namibia were brought into the Kuno National Park, Madhya Pradesh on September 17, as part of an ambitious program to reintroduce this big cat into the country.
- They were placed in quarantine at the KNP.
- The Cheetah was once common in India and other parts of the globe, but they were eventually exterminated.
- Only 8,000 of them are left, and overwhelmingly in Namibia.
- An entirely different species, the Asiatic cheetah (once abundant in India), is now found in Iran.

African Cheetah

- IUCN status - Vulnerable
- CITES status Appendix I of this List.
- This list includes migratory species which have been identified as at risk of extinction across their entire range or a significant part of it.
- Habitat - There are approximately 6,500 to 7,000 African cheetahs living in the wild.
- Physical Characteristics: Larger than the Asiatic Cheetah in size.

Asian Cheetah

- IUCN Status: Critically Endangered
- CITES- Appendix 1 of this list
- Habitat - 40-50 only found in Iran
- Physical Characteristics: Smaller and paler than that of the African cheetah.
- A longer neck, shorter head, and more fur. They are more cat-like and have more red eyes.

Kuno National Park

- It was established in 1981 as a wildlife sanctuary within the Sheopur, Morena and Morena regions.

It was also known by the names Kuno-Palpur or Palpur-Kuno Wildlife Sanctuary.

- 2018 It was granted the status as a National Park.
- It is located in the Khathiar–Gir dry deciduous forest ecoregion.
- It is mostly a dry deciduous forest.

Topic 14. TIGER CONSERVATION

Important for subject: Environment

India has the largest tiger population in the world. The increase in tigers is testimony to the success of wildlife conservation programs that have been in place for almost 50 years.

- According to reports, the number of Tigers was increasing at a rate 6%/annum and their area was stable at around 89,000 km since 2014.
- The 2018 estimates place the tiger populations at 2,967, with more than half being in Madhya Pradesh or Karnataka. Tiger Census was conducted once every 4 years.
- Since 1973, Project Tiger has been implemented consistently. Dedicated Tiger Reserves have been established in India. Antipoaching Measures have played an important role in tiger conservation.
- India has 53 Tiger Reserves, with the most recent being Guru Ghasidas National Park added early in this year.

Project Tiger:

- Project Tiger is an ongoing Centrally Sponsored Program of The Ministry of Environment, Forests and Climate Change that provides central assistance to the tiger states for tiger conservation within designated tiger reserve.
- The National Tiger Conservation Authority (NTCA) is a statutory body of the Ministry, with an overarching supervisory/coordination role, performing functions as provided in the Wildlife (Protection) Act, 1972.
- In 2005, the NTCA was established following the recommendations from the Tiger Task Force. The 2006 Wildlife (Protection) Act gave it statutory status.
- Sariska is India's first successful tiger reserve that has successfully relocated Royal

Bengal Tigers.

Topic 15. GREAT INDIAN BUSTARD

Important for subject: Environment

The Supreme Court recently asked the Government if a focused approach such as Project Tiger can be used to save the Great Indian Bustard (GIB).

Threats to GIB

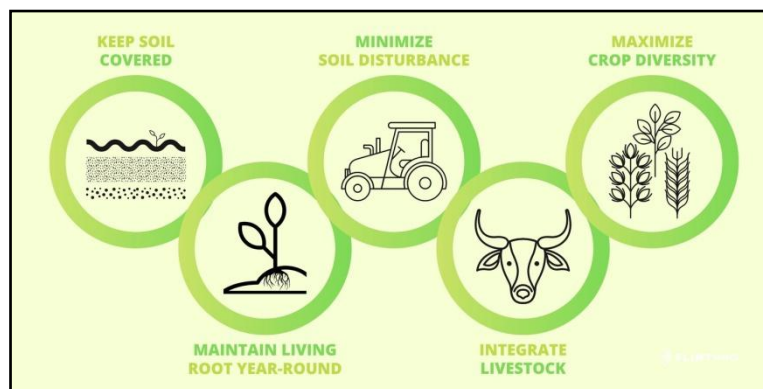
- GIBs slow-breeder and they build nests on the ground.
- These species were Important to hunt and egg collection in the past.
- Decrease in prevailing habitat loss dry grasslands were diverted for another use.
- Pesticide contamination and An increase in the number of free-ranging dogs and pigs along with native predators are putting stress on chicks and nests.
- The frontal vision is very poor and it frequently collides with overhead power lines . This can lead to death.

Conservation Measures

- 16 GIB chicks are being raised in the satellite conservation breeding facility Sam in Jaisalmer (Rajasthan).
- The goal of 'Habitat Improving and Conservation Breeding Great Indian Bustard An Integrated Approach' is to increase the captive population and release the chicks into the wild.
- It is expected that the initiative will take between 20 and 25 years.

Topic 16. REGENERATIVE AGRICULTURE

Important for subject: Environment



According to the Intergovernmental Panel on Climate Change's (IPCC), the report on "Climate Change and Land" listed Regenerative Agriculture as a sustainable land management practice that focuses on ecological functions and can "help build resilience of agroecosystems."

- Regenerative agriculture refers to a holistic farming system that emphasizes soil health, food and biodiversity quality, water quality, air quality, and water quality.
- It is a way of farming that uses less resources than it destroys or depletes them.
- It is also known as: agroecological agriculture, alternative agriculture or carbon farming.

These are the principles of regenerative agriculture:

- Through conservation tillage, you can reduce soil distribution
- Diversify crops in order to replenish nutrients and disrupt the lifecycles of pest and disease
- Retain soil cover using cover crops
- Add livestock to your soil. This adds manure and acts as a carbon sink.

Benefits:

- Enhances soil health by using practices that increase soil organic matter, biota, and biodiversity.
- Increase water holding capacity and carbon capture.
- Reducing erosion, facilitating retention and nutrient cycle
- Provides habitat for diverse species , and is beyond sustainable.
- Increases resilience and reduces the impact of extreme weather due to a changing climate.

What makes regenerative agriculture different from other similar practices and how can it be?

1. Conservation Agriculture
2. Sustainable Agriculture
3. Agroecology Agriculture
4. Regenerative agriculture - Based on three principles

- Zero tillage, crop diversification, and rotation.
- retain soil organic matter and moisture
- Promotes nutrient cycling, and aids in the prevention of pests or diseases.
- Supports sustainable land management, environment protection and climate change adaptation/ mitigation.
- 20 to 50 percent less labor-intensive contributes to reducing GHG emission.
- ensures food supply through efficiency, which makes farming financially viable and improves farmers' quality-of-life.
- However, the term "sustainable" implies that is maintained as it is.
- The goal of sustainable farming is to make the most of what resources are available.
- A holistic approach which enables interaction between humans, plants, and animals.
- It adds equity to the food system by giving people control over production and consumption.
- There are many commonalities in sustainable agriculture.
- It is based on the idea that healthy soils are the foundation for regenerative agriculture. This in turn allows for a symbiotic relationship between soil microorganisms and plants.
- It is open and there can't be one-size-fits all approach to soil regeneration.

Topic 17. THE BATTLE TO BRING FRESHWATER TURTLES BACK FROM THE BRINK

Important for subject: Environment

What's Turtle Survival Alliance?

- The Turtle Survival Alliance (TSA), an International Union for Conservation of Nature partnership for sustainable captive management of freshwater tortoises and turtles, was established in 2001.
- The Asian Turtle Crisis, which was the result of the unsustainable and rampant harvesting of Asian turtles for Chinese markets, led to the creation the TSA.
- Mission: "Zero Turtle Extinctions In The 21st Century"

Status for Turtles in India

- India has 29 species freshwater turtles (24) and tortoises ((5)).

- More than 50% of all the turtle species have been declared endangered and 11 are listed under Schedule I of the Wildlife Protection Act. enjoys the same protection as tigers.
- Three critically endangered turtles are being saved by TSA India as part of its research and conservation breeding programmes in different parts.
- The Northern River Terrapin, Batagurbaska, is being preserved at the Sunderbans
- Red-crowned Roofed Turtle (Batagurkachuga), at Chambal.
- T The Black Softshell Turtle (Nilssonia Nigerians) at various temples in

What's the difference between Turtle & Tortoise?

- The major difference is that turtles live primarily in water, while tortoises live more on the ground.

What's Wildlife Crime Control Bureau?

- The Wildlife Crime Control Bureau, a statutory multidisciplinary body under the MoEFCC, was established in 2007 under the Wildlife Protection Act 1972.
- Wildlife Crime Control Bureau has been designated as the nodal agency to enforce CITES-related laws.
- The Bureau has five regional offices in Delhi, Kolkata, Mumbai and Chennai; as well as five border units at Ramanathapuram Gorakhpur Motihari and Moreh.
- It was awarded the Asia Environmental Enforcement Award - 2020 by the United Nations Environment Programme (UNEP).
- WCCB is required to comply with the Wild Life (Protection) Act of 1972.
- Collect intelligence regarding organized wildlife crime
- Distribute the information to the State and other enforcement agencies to apprehend criminals.
- To create a centralized wildlife crime database;
- Coordinate actions of different agencies to enforce the Act's provisions;
- Assist international organisations & foreign authorities in wildlife crime control
- Capacity Building of wildlife crime enforcement agencies
- Assist state governments to ensure success when related to wildlife crimes are prosecuted;

- A advises the Government of India on issues relating to Wildlife Crimes.
 - It also advises and assists the Customs authorities with inspections of consignments of flora & fauna, as per the provisions of Wild Life Protection Act and CITES.
1. Operation led by the Wildlife Crime Control Bureau (WCCB).
 2. Operation "Save Kurma", which focuses on poaching, transport and illegal trade in live turtles.
 3. Operation Turtshield-I and Operation Turtshield-II were launched to combat illegal trade in live turtles.
 4. Operation 'Lesknow', 'Lesknow-II', and Operation Lesknow-III' to draw attention of enforcement agencies towards illegal trade of lesser-known species of wildlife.
 5. Operation Clean Art was launched to draw the attention of enforcement agencies to illegal wildlife trade in Mongoose head brushes.
 6. Operation Softgold to combat Shahtoosh Shawl from Chiru wool illegal trading and to raise awareness among weavers and other traders involved in this trade.
 7. Operation Birbil is an operation to stop illegal trade in wild cats and wild birds species.
 8. Operation Wildnet, Operation Wildnet-II and Operation Wildnet-III were launched to bring the attention of enforcement agencies in the country to the illegal trade in wildlife via internet. They also launched Operation Wildnet-IV.
 9. Operation Freely to stop illegal trade in live birds
 10. Operation Wetmark is to ensure no sale of meat from wild animals in wet market across the country

Topic 18. WORLD SOIL DAY: 5 DECEMBER

Important for subject: Environment

The following recommend it: International Union of Soil Sciences In 2002.

- The Food and Agriculture Organisation (FAO), has supported WSD's formal establishment as a global awareness-raising platform, under the leadership of Thailand in the Global Soil Partnership.
- The UN General Assembly (UNGA) designated 5th December 2014 as the official WSD.
- The official birthday of H.M. was 5th December, so the date was chosen. The event

was officially sanctioned by King Bhumibol Adulyadej of Thailand.

FAO awards two awards in keeping with this day:

- The King Bhumibol World Soil Day Award An award given annually to individuals, communities and organizations that have organized outstanding and engaging World Soil Day campaigns or activities in the past year.
- The Glinka World Soil Prize An annual award for dynamic change-makers whose goal is to solve one of the most urgent environmental problems in the world: soil degrading.
- This award recognizes those whose leadership or activities have helped to promote sustainable soil management and protection of soil resources.

Soils: Where food begins

- Soil can be made up of organisms and minerals . It also contains organic components which provide food for animals and humans through plant growth.
- To be healthy, soils need to have a varied and balanced supply of nutrients in the right amounts. Each harvest results in a loss of nutrients for agricultural systems. If soils aren't managed sustainably, soil fertility will decline and eventually lead to nutrient-deficient plants.
- The main soil degrading process is soil nutrient loss, which can threaten nutrition.
- The level of vitamins and nutrients in foods has decreased dramatically over the past 70 years. It is believed that around 2 billion people suffer from a lack micronutrients. This is known as hidden hungry, because it is hard to spot.
- Soil degradingSome soils are nutrient depleted, losing their ability to support crops. Others have high nutrient levels that pose a threat to animals and plants, and pollute the environment.
- World Soil Day 2022 (#World Soil Day) and its campaign “Soils: Where Food Begin” aim to raise awareness about the importance of maintaining healthy ecosystems. They address the increasing challenges in soil management and encourage societies to improve their soil health.

Important facts-

- 95% of the food we eat comes from soils.

- Plants require 18 chemical elements that are naturally found in nature. Soils supply 15.
- To meet the 2050 global food demand, agricultural production must increase by 60%
- 33% of soils have been degraded.
- Sustainable soil management could produce up to 58% more food.
- India Initiatives for Improving Soil Health

Soil Health Card Scheme

- The scheme was introduced by the Ministry of Agriculture and Farmers Welfare on December 5, 2015.
- Soil health card (SHC) provides a printed report that shows the nutrient state of soil with respect to 12 nutrients. These are pH (Electrical Conductivity (EC), Organic carbon (OC), Nitrogen [N], Potassium (K), Potassium [S], Zinc (Zn), Boron] and Copper (Cu), respectively, for farm holdings.
- SHC will be provided to all farmers within a period of 3 year. This allows farmers to use recommended nutrients based upon soil test values in order to achieve better soil health, fertility, lower costs, and higher profits. Farmers can track soil samples and obtain their Soil Health Card Report.
- This report is specific to each field and includes important soil parameters. It can also be used to determine crop productivity.

National Productivity Council

- It is a national-level organization that promotes productivity culture in India.
- It was established by the Ministry of Commerce and Industry in 58. It is an independent, multipartite, and non-profit organization.

Organic Farming

- FSSAI defines organic farming as a system of farm management and design that creates an environment for agricultural production without the use synthetic inputs like pesticides, chemical fertilizers, synthetic hormones or genetically engineered organisms.
- Organic farming employs natural fertilizers, which are better than any other option.

They replenish soil with essential nutrients such as nitrogen, phosphorus, and potassium, while also providing organic matter to the soil.

- Natural fertilizers include compost, livestock manure, municipal sludge and legume plants like clover or alfalfa.

Paramparagat Krishi Vikas Yojana

- Paramparagat Krishi Vikas Yojana was launched in 2015. It is an elaborated component of Soil Health Management, (SHM), of the major project National Mission of Sustainable Agriculture.
- PKVY promotes Organic farming through the adoption of organic villages using a cluster approach and Participatory Guarantee System certification (PGS).
- Fertilizer Self Sufficiency

Digital Agriculture

- Digital Agriculture refers to "ICT (Information and Communication Technologies), and data ecosystems that support the development and delivery timely, targeted information and service to make farming profitable and sustainable while providing safe nutritious and affordable food to all."
- **Examples:**
- Agricultural Biotechnology refers to a variety of tools that modify living organisms or parts of them to make or modify products, improve plants or animals, or create microorganisms specifically for agricultural purposes.
- Precision Agriculture (PA) refers to an approach in which inputs are used in precise amounts to achieve higher average yields. This is different from traditional cultivation techniques like intercropping, agroforestry, crop rotation, and so on. It relies on the use of ICTs.
- Digital and wireless technologies are available for data measurement, weather monitoring, robotics/drone technology, and other purposes.
- AgriStack The Ministry of Agriculture and Farmers Welfare plans to create AgriStack', a collection of technology-based intervention in agriculture. It will provide a single platform for farmers that provides them with end-to-end services throughout the entire agriculture food value chain.

- Digital Agriculture Mission This has been initiated by the government for 2021 - 2025 projects based on new technologies such as artificial intelligence, GIS technology, remote sensing, and GIS technology, and use of drones, robots, and other advanced technologies.

Carbon Farming

- Carbon farming, also known as carbon storage, is a method of managing agricultural land that helps to store more carbon and reduce GHG emissions into the atmosphere.
- This involves practices that increase the rate at which carbon dioxide is removed from the atmosphere and converted into plant material or soil organic matter.
- Carbon farming works when carbon gains from improved land management or conservation practices outweigh carbon losses.
- The Nutrient-Based Subsidy Scheme (NBS)
- It was implemented by the DoF starting April 2010.
- NBS provides a fixed amount in subsidy for each grade of subsidized Phosphatic & Potassic fertilizers depending on its nutrient contents.
- It is designed to ensure a balanced fertilizer use, improve agricultural productivity, and reduce the Subsidy burden.

Topic 19. CULTURAL PROPERTIES- ASCERTAINED DANGER

Important for subject: Environment

This property is in imminent danger of being destroyed by:

- grave deterioration in materials; severe deterioration or ornamentation of structure or ornamental features; serious loss of coherence in architectural or townplanning; serious degradation of urban or rural space or the natural environment; significant loss or authenticity of historical significance; significant loss or cultural significance.

Potential Danger

- There are threats to the property that could have negative effects on its intrinsic characteristics.
- These threats include, but are not limited to: Modification of the juridical status of the property, which reduces its degree of protection; absence of conservation policy;

threatening results of regional planning projects, threatening effects from town planning; threat or outbreak of armed conflict; and threatening impacts on climatic, geological, or other environmental factors.

Topic 20. NATURAL PROPERTIES- ASCERTAINED DANGER

Important for subject: Environment

This property is in imminent danger of being destroyed by:

- A significant decline in the number of endangered species or other species of Outstanding universal value for which the property was legally established, caused by either natural factors like disease or human-made factors like poaching.
- The property's scientific or natural beauty is seriously damaged by human settlements, the construction of reservoirs that flood critical areas, and industrial and agricultural development, including the use of pesticides, fertilizers, and major public works such as mining, pollution, firewood collection, and other activities.
- Human encroachment in boundaries and upstream areas that threaten the integrity or property's integrity.

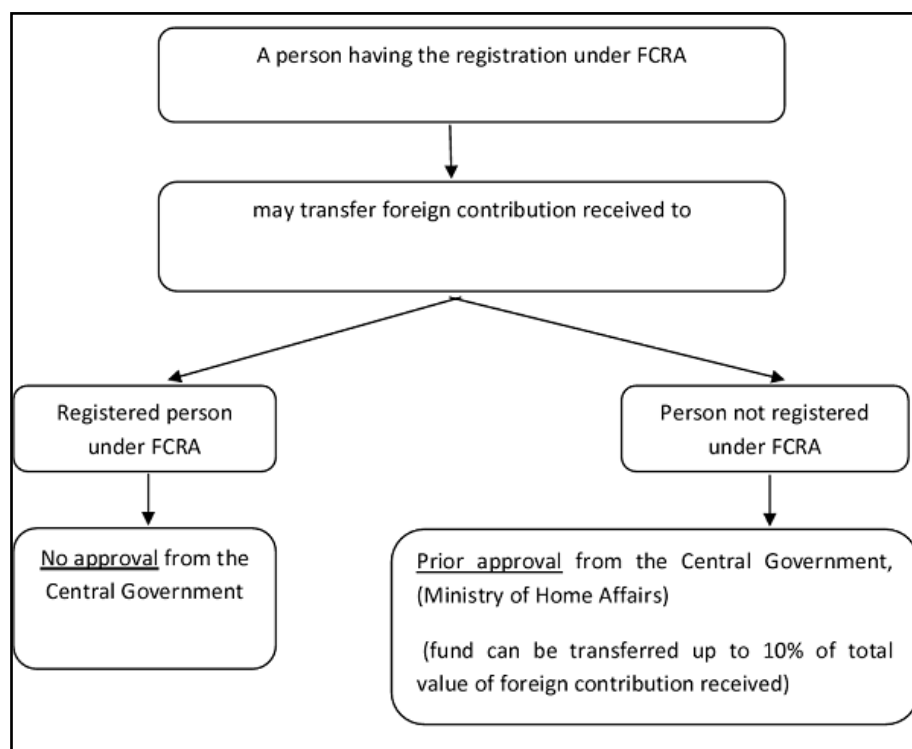
Potential Danger

- There are threats to the property that could have negative effects on its intrinsic characteristics.
- These threats include, but are not limited to: modification of the legal protection status of the area; planned relocation or development projects within or so situated as to threaten the property; outbreak of or threat of armed conflicts; and the management plan or system is inadequate or incomplete.
- The potential for adverse effects of climate, geological and other environmental factors.
- Here are some examples of Sites on The List of World Heritage in Danger. There are 52 properties that have been added to the List of World Heritage in Danger by the World Heritage Committee in accordance with Article 11, paragraph 4, of the Convention.
- These are just a few of the sites listed on the List of World Heritage at Risk as of July 2021.

1. Cultural Landscape and Archaeological Remnants of the Bamiyan Valley, Afghanistan
2. Vienna's Historic Centre (Austria).
3. Garamba National Park (Democratic Republic of the Congo).
4. Abu Mena (Egypt). Tropical Rainforest Heritage of Sumatra, Indonesia (Indonesia).
5. Samarra Archaeological City, Iraq
6. Old City of Jerusalem with its Walls (Jerusalem)
7. Ancient Cities of Aleppo and Damascus, Bosra, (Syria).
8. Everglades National Park (USA).
9. Old City of Sana'a, Yemen
10. There is no site from India find one in the list.

Topic 21. FOREIGN SOURCE UNDER THE FOREIGN CONTRIBUTION (REGULATION) ACT 2010

Important for subject: Economy



The Union Home Ministry released a list containing 117 organizations whose contributions to Indian entities are not covered by the Foreign Contribution (Regulation Act) 2010.

- The UN agencies and international bodies- "to not be covered" by the FCRA include

the UN System's Secretariat and Joint United Nations Programme on HIV/AIDS (UNAIDS), Office of UN High Commissioner For Human Rights (OHCHR), Office of UN High Commissioner to Refugees (UNHCR), United Nations Capital Development Fund, UNCDF, and United Nations Conference on Trade and Development.

- Foreign source under Foreign Contribution (Regulations) Act, 2010,
- Indian organizations receiving foreign funds must be registered under the Foreign Contribution Regulation Act, 2010.
- Organisations/associations in India can accept contributions from a "Foreign Source" only if they are registered with the Ministry of Home Affairs or only after obtaining prior permission from the above Ministry.
- Section 2(e), of the Act defines the "Foreign Source" as: The Government of any foreign territory or country and any agency thereof; any international agency not being the United Nations or any specialized agencies thereof; a foreign corporation; a corporation not being a multinational corporation; a multinational corporation an entity within the meaning the Companies Act 1956 and where more than one-half the nominal value its share capital is held by one or more of these entities:
The Government of a Foreign Country or Territory;
- The citizens of a foreign territory or country;
- Foreign corporations may be incorporated in another country or territory
- Trusts, societies and other associations of individuals
- Foreign company;
- Trade unions in any territory or country, regardless of whether they are registered there;
- A foreign trust or foundation that is primarily financed by a country or territory
- A club, society, or other association formed or registered in India.
- An alien citizen.
- Remittances by Indians abroad, i.e. Indian citizens, for the purpose of contributing to the aforesaid associations/organisations do not attract the provisions of FCRA.
- Non-resident foreign citizens of Indian descent will contribute through their NRE or FCNR accounts in India. The provisions of FCRA will attract these contributions and they are to be considered "Foreign Source".

Topic 22. DIGITAL MARKETS ACT

Important for subject: Economy

CCI Headquarters in New Delhi hosted the fifth edition of the EU-India Competition Week.

- CCI and Directorate General for Competition of the European Commission (DG COMP), signed a Memorandum of Understanding in 2013 for technical cooperation. This has created a platform for dialogue between India and EU, and allowed for exchange of best practices.
- It highlighted topics such as the application of antitrust laws in the digital economy/markets, the introduction of the EU's Digital Markets Act, etc.

About Digital Markets Act

- This applies to online 'gatekeepers'. These companies will need to adhere to the new rules.
- The Digital Markets Act (DMA), was enacted in the European Union (EU), on November 1, 2022.
- To keep an eye on large-scale digital platforms, it introduces quantitative thresholds as well as penal provisions.
- This opens up the possibility of an equal market based on their merits and services.
- It ensures consumers have access to more options and lower prices of services. This is done by enforcing de-exclusivities and competition.
- Companies with a significant dominance in any of the core platform services are designated as 'gatekeepers' by the Act.
- These services include apps stores, online search engines and social networking services.

What is the threshold that would allow you to be considered a "gatekeeper"?

- A minimum annual turnover of EUR7.5 billion in the EU within the last three years or a market value of at least EUR75 billion over 45 million monthly users at least 10,000 businesses established in the EU.
- These rules provide that users have the freedom to choose and install their apps, and are not forced to use software as a default option when installing the OS or web browsers.

- It provides "interoperability"-mean that a user on WhatsApp and one on Message should be able to talk to each other

Obligations to gatekeepers:

- Gatekeepers should "allow the installation, effective use, and support of third-party software applications or software store software".
- Gatekeepers can't make it difficult for app developers to use certain services or create unfair conditions for business users.
- Sellers will be able to access their marketing and ad performance data via the gatekeepers.
- The European Commission will need to be informed by the gatekeepers about any acquisitions or mergers.
- The new rules forbid gatekeepers from ranking themselves or their services higher than other products and prohibit them from using private data they have collected from another service.
- A proportionate subset, or subset of obligations, for a nongatekeeper, reaches the stipulated threshold in order to prevent them from acquiring the same "gatekeeper dominance" by unfair means.

What happens if rules are broken?

- Violators can be fined up 10 percent of their global annual sales and increased to 20% for repeat infractions.
- They could be even banned from further acquisitions in the worst-case scenario.

Topic 23. THIRD-PARTY APPLICATION PROVIDER (TPAP)

Important for subject: Economy

In 2020, NPCI issued a directive that would limit the amount of transactions a third party application provider (TPAP), could process at 30% of the volume of transactions handled by UPI.

- This directive was effective January 1, 2021. It is based on the volume transactions processed in the three preceding months.
- The NPCI proposed a 30% volume limit for third-party apps providers (TPAP) There

is currently no volume cap and Google Pay and PhonePe have a market share of around 80 percent.

- Two (2) years are added to the timeline for compliance with existing TPAPs that exceed the volume cap. To comply with the volume limit, you have until December 31, 2024

Third-party app provider (TPAP)

- TPAPs are (API) standalone applications, or applications that add functionality and/or modifications to an existing parent program/system.
- UPI is only for banks. Only banks can interact directly with the UPI switch. Non-banking entities, however, can participate
- Partnering with a bank entity that is already on UPI platform and developing their own APIs, referred to as third-party apps.
- These entities play a more facilitative role in transactions, as they bear all operational and financial responsibility for transactions initiated through third-party apps. There are more than 20 TPAPs, such as WhatsApp, Google Pay, and WhatsApp. UPI.
- A third-party app requests permission to access user's bank information. This request is then relayed to the banking application by the customer to authenticate it.
- These apps allow consumers flexibility and freedom to choose the solutions that best suit their needs.
- Third party service providers in the payment space are mainly in the form payment gateways, payment aggregators, and TPAPs for UPI.
- A multi-bank model was introduced to allow large TPAPs to tie up with multiple banks in order to be PSPs. TPAPs are a customer interface.
- Transactions continue to be processed by the underlying PSP bank, just as in single bank models.

Topic 24. HOW E-RUPI WILL WORK

Important for subject: Economy

The Reserve Bank of India (RBI), launched the Central Bank Digital Currency, (CBDC), digital rupee or electronic-rupee (eRs).

- CBDC is a digital legal tender issued in digital format by the RBI.

- It works the same way as fiat currency, but it isn't paper (or polymer), like physical cash.
- It is a legal tender that can be used in without the need for a bank account.
- CBDC will be listed as a 'liability (currency not in circulation) in the RBI's balance sheets.
- The form is a digital token representing a claim on central bank. It will function effectively as the digital equivalent to a banknote that can electronically be transferred from one holder.
- A token CBDC refers to a "bearer instrument" similar to a banknote. It means that whoever holds the tokens at any given time will be assumed to have them.
- E-rupees are issued in the exact same denominations paper currency and coins and distributed through intermediaries, that's banks.

How does RBI introduce the CBDC?

- In its initial phase, the pilot will cover four cities: Mumbai (New Delhi), Bengaluru, Bengaluru, and Bhubaneswar. Later, it will be expanded to Ahmedabad and Gangtok.
- Four banks were awarded Rs2 crore by the RBI
- The selected customers from the cities will receive CBDC wallets that include digitally printed notes with the signature of the RBI Governor.
- Banks selected 50,000 merchants and customers to be part of this closed group. They had to download a QR code for digital rupees in order for them the transact.
- Transactions will be via a digital wallet provided by participating banks and stored on mobile phones or devices.
- Send SMSes were sent by banks to selected customers. They included links to the Android Play Store to download bank-specific CBDC apps.
- Customers who used their debit card details to create an e-wallet via the app
- Customers loaded their wallets with money and had it transferred to their bank accounts in tokens.
- This money was used for transacting with merchants and other people with similar wallets.
- Transactions can be person-to-person (P2P), or person to merchant (P2M). QR codes will be available at the merchant location for P2M transactions, such as shopping.

- This money can be redeemed to your bank account at the end of each day. Eight banks will participate in the pilot: the State Bank of India and ICICI Bank, Yes Bank, IDFC First Bank, IDFC First Bank in Phase 1 in the first four cities and then Bank of Baroda and Union Bank of India and HDFC Bank.

What makes this wallet different than other wallets?

- Paytm and Google Pay, UPI-based apps that are based on UPI have daily and per-transaction spending limits. However, the RBI has not set any limit for digital rupees being held in wallets.
- Tax matters will likely include digital rupee transactions exceeding Rs 2 lakh

What are the different types of e-rupees?

- Retail E-rupee is an electronic version cash that can be used primarily for retail transactions. It can also provide safe money for settlements and payment.
- Wholesale CBDC is restricted access for select financial institutions.
- It is designed to improve the efficiency and security of the capital market in terms of operational costs, collateral use, and liquidity management.

What is CBDC's difference from cryptocurrency?

- It is backed in part by the RBI, while private virtual currencies such as Bitcoin are not backed by any commodities or Central Banks and have little intrinsic value.
- Private currencies are not meant to represent anyone's debts or liabilities. They also have no issuer.
- By passing established and regulated control and intermediation arrangements is more the inherent design of cryptocurrency. This can lead to financial instability.

What are the advantages of e-rupee?

- Cash dependence reduced
- Lower transaction costs result in higher seigniorage
- Lower settlement risk - CBDC can be transacted in lieu of bank balances to eliminate the need for interbank settlement.
- It is possible to reduce the cost of printing, transporting and storing currency.

Can CBDC be used offline?

- There is no indication from the RBI that e-rupees will work in offline mode.
- Offline functionality will permit CBDC transactions in areas with limited or no Internet connectivity, and creates digital footprintsof unbanked people in the financial system.
- Double-spending is possible in offline mode, since it will technically be possible to use a CBDC units more than once without having to update the common ledger.
- Is it susceptible to cyber-attacks
- Cyber-attacks could be as severe on CBDC ecosystems than existing payment systems.

Topic 25. NATURAL GAS PRICING REGIME

Important for subject: Economy

To review the gas pricing formula, the Kirit Parikh committee has been appointed.

Natural gas pricing:

- India's natural gas pricing situation is complex and diverse.
- Pricing formula based on the Formula/Administered price mechanism (APM)
- A large amount of natural gas produced in the country doesn't have a market-determined value. This means that it is not determined by sellers and buyers based on the demand-supply dynamics in he market.
- The Administered Prices Mechanism regulates the price of natural gas from fields that were awarded to ONGC and Oil India.

(APM)

- APM gas accounts to over 90% of ONGC natural gas output.
- The government sets gas prices every six months. It is the average of four benchmarks: the US-based Henry Hub and Canada's Alberta gas.
- The domestic price is calculated using the international benchmark prices for the previous year. It applies with a quarter-year lag and lasts six months.
- The price for April 1 through September 30, 2019, is based upon benchmark prices from January 2018 to December 2018.

- APM gas was allocated to priority power producers and fertilisers
- Non-APM or Free Market Gas-two categories-domestically produced gas from Joint Venture fields and imported LNG.
- The pricing for JV gas will be determined by the provisions of the PSC ("Production Sharing Contract") provisions.
- The price for LNG under term contracts will be governed by the SPA between the LNG seller and buyer. However, spot cargoes can only be purchased on mutually acceptable commercial terms.
- There are different pricing models for different sectors-Subsidized areas like power and fertilizer have lower prices than other sectors.
- The country has North Eastern states that get gas at lower prices than other areas.

Implications of formula-based pricing:

- The formula does not mention gas that is actually imported into India. Gas imported to Asian markets is more expensive than international benchmarks. The price of domestic gas is therefore lower than the price of imports.
- A quarter time lag means that domestic gas prices are often outpaced.

Topic 26. Q2 DATA

Important for subject: Economy

The Ministry of Statistics and Programme Implementation released India's second quarter economic growth data (2022-23, or FY23).

- The Q2 or second quarter refers to the months July, August, and September.
- Indicators Q2 based on a year-on
- Gross Domestic Product 6.3 Percent
- Gross value Added (or GVA), 5.6%
- The GDP, at Rs 38, 16.578 crore, is significantly higher than the GVA, which is at Rs 35.05,599 million.
- Decrease in key sectors for job creation:
- Contraction in the sector - 4.3% during the Q2.
- The growth in services has been barely above 2 percent.
- The decline in Mining and Quarrying has been almost 3%.

- The agriculture GVA (alongside forestry and fishing), grew at 4.6%.

On GDP side

- Private Consumption is the largest engine of growth, accounting for 55% of India's total GDP.
- The GDP-33 percent second largest contributor is investment. It has risen by 10.4% in FY21, and almost 21% in FY20- FY23.
- The GDP has seen a contraction in government final consumption expenditures, which is between 10-11% and . It fell by 4.4% percent in Q2 and is now 20% lower than the pre-Covid level.
- Net exports - India imports more than it exports so the NX value of India is negative. It rose by 89% in Q2.
- Although the economy has been growing since the pandemic it is still in decline. However, the lower interest rates, the contraction of the manufacturing sector and a slowing rise in consumption are all factors that will impact the second half.

What does GDP and GVA stand for?

- The two most important ways to determine the country's economic performance are GDP and GVA.
- Both measures are indicators of national income.
- The GDP measures a country's monetary value for all final goods and services that were produced in a specified period.
- This is done by adding the total economic expenditures to the GDP.
- This is why GDP captures all "demand" in an economy.

Components:

- All Indians' money spent on their private consumption.
- All the money that the government spent on current consumption such as salaries - Government final Consumption Expenditure, or GFCE.
- All money invested in investments to increase the productivity of the economy.
- This applies to both business firms that invest in factories and governments that build roads and bridges.

- The net effect of imports and exports (what foreigners spend on our goods)-Net Exports, or NX.
- The GDP data can be more useful when looking at annual economic development and when one wishes to compare economic growth of a country with that of another country.
- The GVA is the same national income as from the supply side.
- It does this by adding all the value across different sectors.
- The sector's GVA is the sum of the output and the intermediary inputs.
- This "value addition" is shared between the primary factors of production and labour.
- Looking at the GVA growth can help you understand which sector is strong and which is weak. GVA data is better than quarterly data when one is looking at data.

What is the relationship between these two?

- The GDP can be derived by looking at GVA data.
- **GDP= (GVA) + (Taxes paid by the government). -- (Subsidies offered by the government).**

Topic 27. ANIMAL SPIRIT

Important for subject: Economy

Uday Kolak asked big companies for more investments

What is animal spirit?

- John Maynard Keynes invented the term "animal spirit". It refers to the desire of consumers and businessmen to invest more and consume more. Animal spirit can be defined as the psychological desire to engage in more economic activities, both by consumers and investors.
- Keynes explains this concept in his book General Theory. "Most likely, our decisions to do some positive thing, the full consequences for which will be drawn out in many days, can be taken as the result animal spirits - an spontaneous urge to act rather than inaction."

What does it mean to overcome recession with animal spirit?

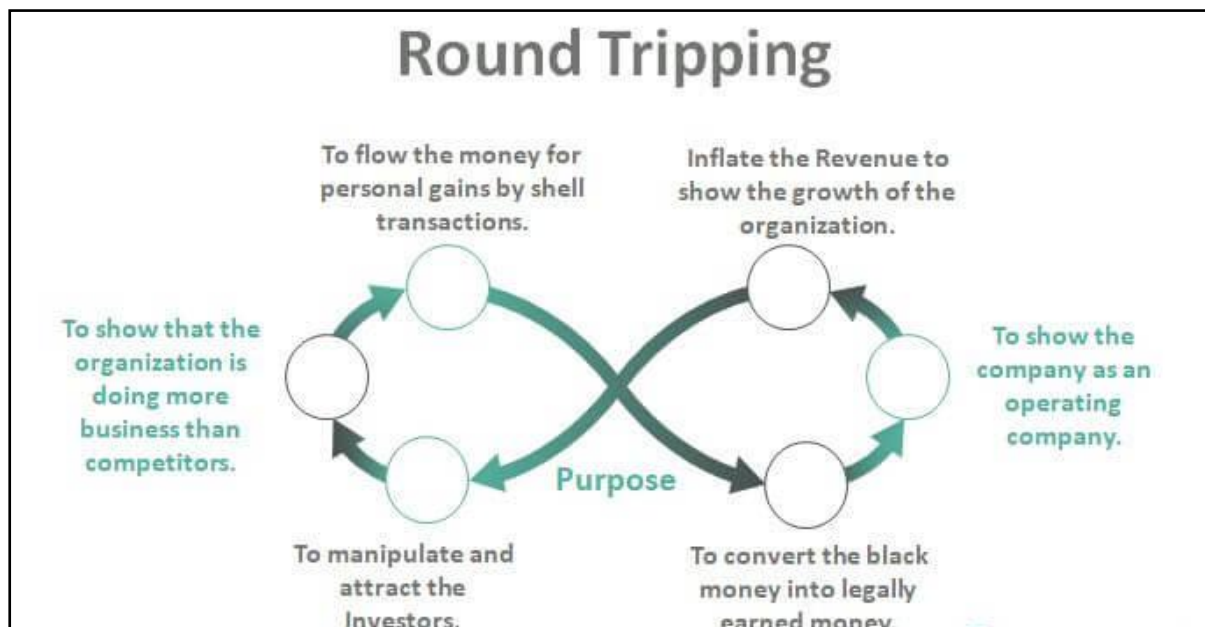
- The most important thing about animal spirits is their ability to inspire investors to

invest more even in uncertain times.

- This means that even in a difficult economic environment, higher investments can be made if animal spirits are activated. Animal spirit has been used a lot in recent years to stimulate investment and revive economies from the depths of recession.

Topic 28. ROUND TRIPPING

Important for subject: Economy



To roundtrip money to India, tax havens are used

- A tax haven refers to a country with low tax rates for foreign investors.
- A tax haven can also offer financial secrecy according to some old definitions.
- However, countries with high levels both of secrecy and high rates of taxation such as the United States or Germany in the Financial, have a tendency to be more secretive than others.
- Although Secrecy Index ("FSI") rankings can be included in tax haven lists, these are not considered to be tax havens.
- The Andorra and the Switzerland are two of the most well-known tax havens.
- Bahamas, Belize, Bermuda and the British Virgin Islands, The Channel Islands, The Cook Islands, The Channel Islands, The Channel Islands, The Channel Islands, The Cook Islands, The Island of Jersey Hong Kong, The Isle of Man Mauritius Lichtenstein Monaco St. Kitts and Nevis.

- Many tax havens are described by notable authors as "captured countries". This term is used primarily for smaller tax havens such as Jersey, Antigua and the Seychelles.
- There is no universal standard that defines the definition of tax haven countries. There are many regulatory bodies that monitor tax-haven countries, such as the Organization of Economic Cooperation and Development, and the U.S. Government Accountability Office.
- Generally, tax haven countries have the following characteristics: low or no income taxes, minimal reporting of data, lack transparency obligations, absence of local presence requirements and marketing of tax haven assets.

Round trip

- Money leaves the country through various channels, such as inflated invoices, payments made to offshore shell companies, and the hawala route. This money is returned to the country in fresh laundered form after cooling off for a while overseas.
- How can the money be returned to India? It could be invested in offshore funds, which in turn will invest in Indian assets. Other routes include the Global Depository Receipts, or GDR, and the Participatory Notes (P - Notes), which were used in the past.

Topic 29. UN GROUNDWATER SUMMIT 2022 TO HELP RAISE AWARENESS ON AQUIFER PROTECTION, SUSTAINABLE USE

Important for subject: Geography

The United Nations-Water Summit on Groundwater 2022 will highlight the importance of groundwater protection and sustainable water use. It begins in Paris, France, on December 7, 2022.

Organised By

- UN-Water, UNESCO, and the International Groundwater Resources Assessment Centre will host the conference over two days.
- These discussions will focus on the challenges and opportunities of groundwater management around the globe as described in the United Nations World Water Development Report 2022.

- Goal- To increase awareness on groundwater conservation worldwide.
- UN Water also runs the campaign Groundwater: Making invisible visible.
- The campaign highlighted groundwater's role in alleviating poverty, food insecurity, and other socioeconomic development obstacles.

United Nations Water (UN-Water)

- It is an interagency mechanism, which coordinates the efforts United Nations entities as well as international organizations working in water and sanitation.
- More than 30 UN agencies are involved in water and sanitation programs, which is a reflection of the fact that water issues cross all main focus areas of the UN.
- UN-Water's role in coordinating UN response to water-related problems is to 'deliver as one'.
- Most offices are located in Geneva (Switzerland).

Topic 30. CYCLONE MANDOUS TO FORM DECEMBER 7 WILL BE SLOW-MOVING

Important for subject: Geography

From December 8th, a cyclone could affect the Tamil Nadu or Puducherry coastlines.

Information about the cyclone mandous

- Name suggested by United Arab Emirates
- Location -Southern Bay of Bengal off the coasts of Tamilnadu & Pudduchhery
- A low-pressure region formed above the south Andaman Sea, and it intensified to a well-marked area of low-pressure.
- Slow-moving Cyclones can often absorb a lot water, bring humongous amounts rain and gain strength through wind speeds.
- Data from the European Centre for Medium-Range Forecasting
- (ECMWF) and the Global Forecasting System of United States showed that the system is moving slowly after intensifying into a cyclone.

Topic 31. BLACK SOIL IN RED: CLIMATE CHANGE THREATENS WORLD'S FOOD BASKET

Important for subject: Geography

Black soils, that feed the world's population, are in danger. Most soil organic CO (SOC) stocks have been lost to, according to a new United Nations study.

Black soils

- These soils have a rich, dark-coloured soil horizon rich in organic matter. These soils are some of the most fertile and productive in the world.
- Black soils could provide 10% of global SOC sequestration if given proper attention.
- Europe and Eurasia are the most potential countries with over 65 percent, while Latin America and the Caribbean have around 10%.
- Black soils housed 2.86 percent of the world's population. They had 17.36% of cropland, 8.05% of global SOC stock, and 30.06% of SOC stock of global cropland.
- In 2010, 66% of the world's sunflower seeds, 51% of small millet, 42% of sugar bet, 30% of wheat, and 26% of potatoes were grown from black soils.
- 93% of the Moldovan population, and 52% of the Ukrainian population, both live on black soil.
- Currently, agricultural production accounts for two-thirds the black soil area.

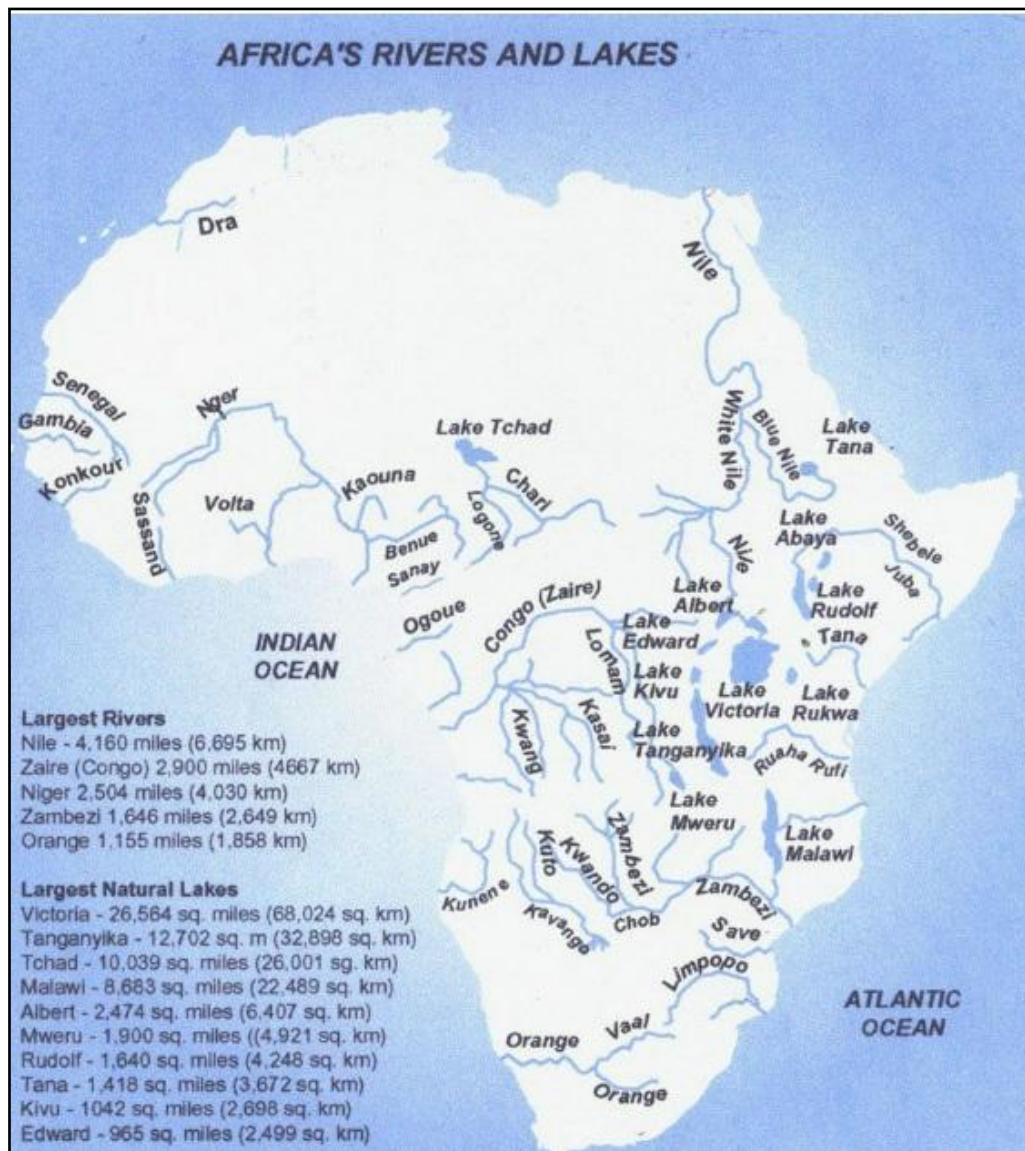
Distribution black soils

- The largest area is held by the Russian Federation, followed closely by Kazakhstan and China.
- Europe and Eurasia made up 70% of total soil, while North America, Latin America, the Caribbean, and Asia each had 10%.
- Report on the global status of black soils
- Published on World soil day (5/12) by FAO
- Threats are: Land-use changes, unsustainable management practices, excessive use of chemicals, moderate to severe erosion, nutrient imbalances and acidification, as well as biodiversity loss.
- As a solution to human-caused climate change, the ability of soils remove carbon from the air and store it in soil organic matter (called Carbon Sequestration).

- What are the implications? 3/14 They have lost 20 to 50% of their original Soil Organic Carbon stock (SOC). The carbon is being released mostly as carbon dioxide into the atmosphere, thereby increasing global warming.

Topic 32. MAJOR RIVERS IN AFRICA RAN DRIER THAN USUAL IN 2021, FINDS WMO

Important for subject: Geography



According to a report from the United Nations, the volume of water in Africa's major rivers has decreased in 2021 in comparison to the average over the past two decades.

State of Global Water Resources Report

- WMO published the first edition.
- The Niger and Congo rivers were less than the average from 2002 to 2020.
- However, the water storage levels within the river basins have increased since 2002, an unusual situation compared to the rest.
- Since 2002, the water storage levels in these river basins, also known as terrestrial storage (TWS), have steadily increased.
- TWS has seen a rise in Congo, Nile and Zambezi as well as Orange and Lake Victoria in other parts of North Africa.
- Climate change is responsible for the increase in water storage at Lake Victoria as a result of intense rains.
- From 2002 to 2021, TWS was lower on all continents except Africa.

Lake victoria

- Lake Victoria, also known as Victoria Nyanza is the largest lake in Africa. It lies primarily in Tanzania and Uganda, but borders on Kenya.
- Its surface is 26,828 sq. miles (69.484 km).
- It is the largest freshwater lake in the world and only Lake Superior in North America surpasses it.
- It has an irregular quadrilateral shape.
- Numerous archipelagos and reefs can be found within the lake.
- Lake Victoria is home to more than 200 species fish. The Tilapia is the most important economically.

Africa's most important rivers-

River Nile

- This river is the longest in the world.
- It begins from several streams in the equatorial forest of Lake Victoria and Ruwenzori Mountain, the mountains of the Moon region.
- It flows from Lake Albert as the White Nile.
- It is joined at Khartoum by the Blue Nile, which originates from Lake Tana in the Ethiopian Highlands.
- The Nile flows 3,000 km through Egypt's dry Sahara Desert before entering the

Mediterranean Sea.

- Egypt is known as the gift of Nile, because it would not have been desert without the Nile.
- Cotton cultivation, petroleum at mouth, navigable. Irrigation Aswan dam, Lake Naseer
- Port Said, Alexandria, and Giza at the mouth of Cairo, Giza, Khartoum are all on River Nile

River Congo, or Zaire

- The Congo is Africa's second longest river.
- It flows into the Atlantic Ocean from the southernmost point of Lake Tanganyika.
- The Zaire basin is one the most arid regions on the Earth. It is covered in dense, impenetrable jungle.
- Because of rapids or waterfalls from the slope to the coast, the river and its network tributaries are not navigable.
- Origin: Katanga Plateau
- Boyoma waterfall
- Pigmy tribes
- The mouth of the oil reserve
- Crosses the Equator twice

River Niger

- This is West Africa's main river. It flows from the Fout Djllon Mountain, close to the ocean. However, it then flows north to form an arc.
- It joins the Gulf of Guinea in the Atlantic Ocean.

River Zambezi

- River Zambezi flows into Indian Ocean
- This river is home to the famous Victoria Falls, which can be seen at the end of a long canyon.

River Limpopo

- The River Limpopo flows into the Indian Oceans twice, crossing the Tropic of Capricorn once.

River Orange

- This water flows from the Drakensberg Mountains to the Atlantic Ocean.6/23

Africa's most important lakes

Victoria

- Tropical Lake is the 2nd largest freshwater reservoir in the world.
- Tanganyika Rift valley Lake, the largest lake in volume around the world.
- Malawi
- African Rift Valley
- Turkana
- Alkaline Lake

Lake Albert

- Western Rift
- Lake Edward
- Drain North to Lake Albert
- Lake Kivu
- Ruzizi River

Lake Tana

- The Ethiopian Plateau. It is the source for the Blue Nile.

Lake Chad

- The Sahara Desert's southern edge is surrounded by an area of inland drainage.

Lake Kariba

- The Zambezi River is located in the south of Africa. It is the largest African producer of hydroelectricity and is one of the most beautiful looks that man has made.

Lake Assal

- It is located in Djibouti, the lowest point of Africa.

Topic 33. INDONESIA'S MOUNT SEMERU VOLCANO ERUPTS, TOP ALERT STATUS TRIGGERED

Important for subject: Geography

Indonesia's Mount Semeru erupted on Sunday, spewing hot ash clouds up to a mile in the sky and sending rivers down its side. This prompted authorities to raise the alert level to the highest possible.

Information about the eruption

- It is located on Indonesia's main island Java, approximately 800 km (500 miles) southeast Jakarta.
- The eruption was caused by piles of lava at a tip of the 3676-metre volcano (12,000 feet).
- A year after the last eruption
- Mount Semeru erupted exactly a year ago. It killed at least 51 people, and damaged more than 5,000 houses.
- Semeru's alert status remained at its second highest level since its last major eruption in December 2020. This forced thousands of people to flee, and left many villages completely flooded.

Why is there a volcanic eruption in Indonesia?

- Indonesia is located on the Pacific Ring of Fire , which is where continental plates meet and cause high volcanic activity and seismic activity.
- Nearly 130 active volcanoes are found in the Southeast Asian archipelago country.
- In late 2018, a volcano in the strait of Java & Sumatra islands erupted, causing an underwater landslide as well as a tsunami which killed more than 400 people.

Mount Semeru

- Mount Semeru, also known as the Semeru volcano, is located in East Java (Indonesia).

- It is located in the subduction zone, which is where the Indo-Australian plates subduct under the Eurasia plates.
- It is the highest mountain in Java.
- Named after Meru, the central mountain of Hinduism or Sumeru (the abode for gods), the name "Semeru", it is also derived from the Hinduism's Meru.
- This stratovolcano also goes by the Mahameru, which means "The Great Mountain" in Sanskrit.

Topic 34. COASTAL RED SAND DUNES OF AP

Important for subject: Geography

Scientists call for Andhra Pradesh to govt. Protect coastal red sand dunes from Vizag's glacial period. Study the effects of climate change. It has been through both warm and glacial periods.

- Popularly, the coastal red sand dunes are known as 'Erra Mati Dibbalu'.
- It is between 18,500 and 20,000 years old. It can be dated back to the last glacial period.
- This site's uniqueness is the red sediments, which are a continuation of the evolution on the earth, and represent the late-quaternary geologic time.
- They can reach up to 30m in height and exhibit badland topography, which includes gullies and sand dunes.
- The top-light-yellow sand unit (estimated that it was deposited around 3,000 year ago) did not achieve the red colour because the sediments were unaltered.
- These sediments are nonfossiliferous, and were deposited on top of the khondalite basement.
- The dunes are composed of yellow-sand dunes with light-yellow tops and a brick-red sand unit at the bottom.
- It also has an archaeological significance. Studies of artifacts suggest an Upper Palaeolithic Horizon. Cross dating assigns Late Pleistocene Epoch, which is 20,000 BC.
- The Geological Survey of India (GSI), in 2014, declared this site a geo-heritage location. In 2016, the Andhra Pradesh government listed it under the protection of 'protected site'.

- These rare sand deposits have only been reported from three locations in South Asia, Erra Mati Dibbalu (Vishakhapatnam) and Teri Sands (Tamil Nadu).
- Because of scientific reasons, they are not found in temperate or equatorial areas.

Topic 35. WHAT DOES ELON MUSK'S BRAIN CHIP COMPANY NEURALINK DO?

Important for subject: Science and Technology

What is NEURALINK DEVELOPING?

- Neuralink was founded in 2016 by Musk and other engineers. It is developing a brainchip interface that can be implanted into the skull. This could allow disabled patients to communicate and move again and restore vision.
- Neuralink's device is equipped with a chip that transmits and processes neural signals. These signals could be sent to devices such as a computer or phone.
- Neuralink believes that its device can restore neural activity within the body. This will allow those with spinal cord injuries and other neurological conditions like Alzheimer's or dementia to move their limbs.

What PROGRESS HAS NATURALINK MADE?

- It was 2021 and showed a macaque playing simple videogames after having a brain chip implanted.
- Neuralink is yet to receive U.S. regulatory approval for human trials.

Topic 36. WHAT IS OPENAI'S CHATGPT CHATBOT, WHY IT HAS BECOME A VIRAL SENSATION?

Important for subject: Science and Technology

What's ChatGPT?

- OpenAI created chatGPT, which is a start up focused on artificial Intelligence and potential uses.
- OpenAI's prominent investors include Microsoft and Khosla Ventures. Reid Hoffman's charitable foundation is also among them.
- It is based upon the GPT3.5 series of language learning model (LLMs).
- GPT is for Generative Pretrained Transformer 3. This is a type of computer language model that uses deep learning techniques to create text with human-like

characteristics based on inputs.

- ChatGPT is available to answer any follow-up questions. It can also admit its errors, challenge incorrect premises and reject inappropriate requests.
- It is currently in beta and available to all users.
- ChatGPT is trained to decline inappropriate requests, which may be illegal in nature.
- ChatGPT can write fiction but not at the level that humans.
- Google-led LaMDA is another chatbot.

ChatGPT will replace writing humans?

- Although it sometimes lacks context and substance, the chatbot provides answers that are grammatically correct.

Topic 37. UK: SIX CHILDREN DIE OF STREP A, A COMMON BACTERIAL INFECTION

Important for subject: Science and Technology

Six children died from a common bacteria infection, StrepA, in the United Kingdom, as of December 5, 2022.

- Strep A symptoms
- Group A streptococcus is a common strain of bacteria that can be found on the skin and in the throat. This is known as invasive Group A Strep.
- It is usually manifested as high fever and severe muscle aches.
- Strep A symptoms include skin rashes, fever, and sores that can be easily treated with antibiotics.
- There is always a possibility that the infection could become severe if the bacteria gets into the bloodstream.
- These viruses are easily spread through close contact, coughs, and sneezes.
- There is currently no cure.

What were the past trends?

- From November 14-20, 851 cases were reported of Strep A. This is compared to the average of 186 in previous years.
- The incidence of iGAS cases has also increased from the pre-pandemic 0.5% cases

per 100,000 children aged 1-5 years, 2017-2019 up to 2.3% cases per 100,000 children.

Topic 38. INCREASING THE SHELF LIFE OF STORED BLOOD

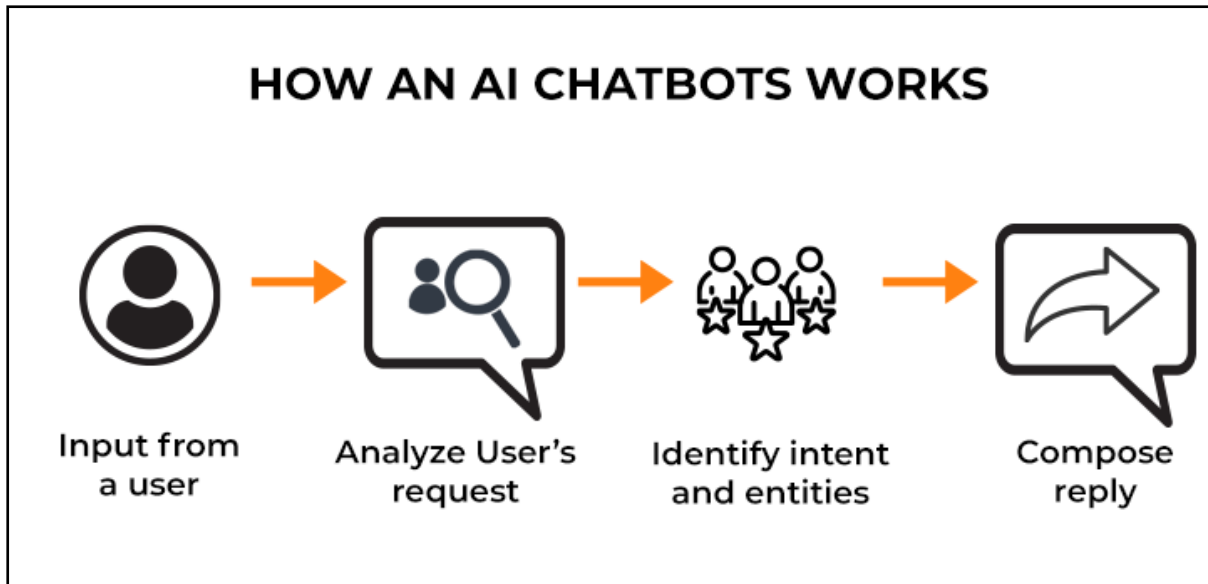
Important for subject: Science and Technology

The new blood bag technology has been developed by the Institute for Stem Cell Science and Regenerative Medicine, an independent institute of the Department of Biotechnology. It is designed to increase the quality and shelf-life of blood stored in storage by 25%.

- Due to a decline in quality during storage, millions of blood units have been thrown away.
- The shelf life of stored blood is.
- Often, stored cells produce extracellular components known as damage-associated Molecular Patterns (DAMPs), which damage blood cells during storage.
- Extracellular components are free iron and free haemoglobin and bioactive oils such as polyunsaturated fatty acid, extracellular DNA and proteins.
- These components can interact with each other and cause damage to the red blood cells (RBCs)
- So, custom-designed nanofibrous sheets that are made with anionic and cationic polymers can be used to protect RBCs and scavenge damage-causing agents via ionic interactions.
- These sheets can be made to intermittent blood bags
- The capture of DAMPs on day 21 or 28 following collection with the novel blood bags has helped to protect RBCs from losing their membrane integrity and increased transfusion efficiency.
- This technology allows for storage of old blood for 42 days at the same quality as fresh blood. It may also be beneficial in preserving rare blood types.

Topic 39. ARTIFICIAL INTELLIGENCE (AI)-BASED CHATBOTS

Important for subject: Science and technology



Government agencies and public sector organizations are driving the adoption of AI-based chatbots for India.

- These platforms are being used by the National Payments Corp. of India, Indian Railways and Bangalore Metro Rail Corp. Ltd. (BMRCL), and Bharat Petroleum Corp. Ltd. (BPCL) to answer queries and take bookings.
- A chatbot aids in customer service and engagement by replacing or augmenting human agents with artificial intelligence (AI), and other automation technologies that communicate with end-users over chat.
- This tool is designed to make it easy for customers to use. are automated programs that interact like humans with customers and are very affordable.
- Chatbots are used by businesses in Facebook Messenger or as virtual assistants such as Amazon's Alexa.

Rule-based chatbots vs AI bots

- Rule-based chatbots can also be referred to decision-tree bots, which are defined rules that use a set of defined rules.
- These rules define the problems that the chatbot can solve.
- Chatbots that are rule-based can use simple or complex rules. However, they can't answer questions that aren't within the set rules.

- Machine learning is used to help AI chatbots understand context and intent before providing a reply.
- These chatbots can generate answers to more complex questions by using natural language responses.
- These bots will learn more as they are used and trained more often.

Example-

- DigiSaathi is a chatbot service that allows customers to get information about digital payments via WhatsApp.
- It was launched by the Reserve Bank of India, and the National Payments Corporation of India.
- This is a 24 hour helpline that provides information about various products and services available across all types of payment cards: debit, credit, prepaid cards, UPIs, QR-based transactions, mobile banking, ATMs, and so on.
- It will provide contact information for various participants in the payment system, both banks as well as non-banks.
- There are two ways to get information from DigiSaathi a toll-free number 14431 or 1800 891 3333 official website-digisaathi.info
- Chatbot Central Railways designed to entertain users on selected train routes. It provides information to passengers about journey locations.

Topic 40. ONE STEP CLOSER TO A UNIVERSAL FLUE VACCINE: WHAT THE NEW STUDY SAYS***Important for subject: Science and Technology***

A new study has described successful animal testing of Universal Flu vaccine, which can prepare the body to fight all known strains of influenza. The vaccines are based on mRNA.

Information about the universal vaccine

- The vaccine is still in its early stages. It is currently being tested only on mice and ferrets.
- This vaccine offers hope that one shot can be used to fight multiple viruses. Similar vaccines could also be created for other viruses such as SARS-CoV-2.

- Although the vaccine will not replace annual flu shots, it would protect against serious disease and death from possible pandemic threats.
- A universal flu vaccine
- Current flu vaccines are effective against seasonal flu, but they do not protect against pandemic threats.
- The conventional vaccine was ineffective against the virus during the 2009 H1N1 pandemic.
- Technical hurdles and the variety of the flu virus were the main obstacles to developing such a vaccine. There are 20 different subgroups of influenza, each with thousands of viruses.
- The current vaccines only target four subgroups.
- However, the experimental vaccine has all 20 and would be quicker to make.
- High levels of antibodies were produced by the vaccine in ferrets as well as mice to all 20 flu subtypes.

The challenges in developing such vaccines -

- Although the antibodies in test animals were lower after receiving vaccines, they still had enough strength to fight influenza.
- It is difficult to design a universal vaccine that can be used by all ages.
- It is unknown how long this vaccine will protect you.

Way ahead

- The vaccine offered strong protection against viruses that were not contained in those subgroups.
- Conventional flu vaccines only target the viruses that they were designed to combat. However, mRNA vaccines appear to produce antibodies that protect the body against a wider range of viruses than the ones included.
- Next, the vaccine will be tested in monkeys as well as in humans.

Topic 41. TANPURA

Important for subject: Art and Culture

Distressed artisans are seeking the support of the Indian Council for Cultural Relations (ICCR), which sponsors their workshops in the U.S. and U.K., due to declining patronage for stringed instrument manufacturers in the domestic market.

- Tanpura, also known as tambura and Tanpuri is a plucked string instrument, or drone instrument. It originated in India and can be found in many forms in Indian Music.
- The tanpura was "fully developed in its current form" by the 16th century. It can be seen in miniature paintings of the Mughals.
- It doesn't play melody. supports and sustains the melody from another instrument or singer through a continuous harmonic drone.
- Tanpuras are not played in rhythm along with soloists or percussionists: the timing of the plucking of a cycle of four strings in a continuous sequence is a determinant factor for the sound. It is therefore played unchangingly throughout the performance.
- Tanpuras can be made in two styles.
- Miraj is the preferred form of Tanpura for Hindustani actors. It measures between three and five feet long and has a carved, round resonator plate (tabli), and a long hollow straight neck in section resembling an oval capital D. The lower chamber to which the tabli and connecting heel-piece (dandh), are attached is made from a dried, selected gourd (tumba). The wood used is either teak or tun; bridges are often. Cut from one bone piece.
- Tanjore: This South Indian style tambura is used extensively by Carnatic performers. Although it has a slightly different design and decoration style than the miraj, it is roughly the same size.
- No gourd is usually used. However, the spherical portion is gouged from a block of solid wood.
- The neck is smaller in size. Jackwood is used all throughout. Bridges are often made from one piece rosewood.

Music instruments

1. The NatyaShastra was compiled by Bharat Mui and dates back to 200 B.C.-200 A.D. Musical instruments are divided into four categories based on how sound is produced.

2. The Tata Vadya or Chordophones - Stringed instruments
3. The Sushira Vadya or Aerophones - Wind instruments
4. The Avanaddha Vadya or Membranophones - Percussion instruments
5. The Ghana Vadya or Idiophones - These instruments are solid and do not require tuning.

Indian Council for Cultural Relations:

- was founded in 1950 by Maulana Abdul Kalam Azad. In 2020, it celebrated 70 years of existence.
- It is an independent organisation of the Government of India that is involved in India's cultural relations, i.e. cultural diplomacy.
- Objectives:
 - Participate actively in the formulation and execution of policies and programs pertaining to India's cultural relations with other countries.
 - To promote and strengthen cultural relations between the two countries.
 - India and other countries
 - To encourage cultural exchanges between countries and peoples, and to establish relations with nations.
- It has 36 cultural centres in various countries with the promotion of Indian culture.

As a way of promoting India's culture abroad, it established several awards for foreign nationals:

- Distinguished Indologist Award
- World Sanskrit Award
- Distinguished Alumni Award – Citation and Plaque
- Gisela Bonn Award

Topic 42. KASHI TAMIL SANGAMAM PROGRAMME

Important for subject: Art and Culture

Kashi Tamil Sangamam saw a high demand for Tamil learning books. This was due to both the demand from Hindi speakers and Tamil-origin residents in Varanasi.

- The programme's objective is to recognize, reaffirm, and rediscover the centuries-old

connections between Tamil Nadu (and Kashi) - two of India's most ancient and important learning centers.

- This program would be part of the Ek Bharat Shreshtha Bharat initiative.
- It aims to offer a platform for all walks of life including students, philosophers and traders, artisans, artists, and scholars. The programme is designed to bring together people from both regions, exchange their culture and best practices, and learn from one another.
- This effort is in line with NEP 2020's emphasis on integrating Indian Knowledge Systems' wealth with modern knowledge systems.
- IIT Madras, and BHU were the two implementing agents for this programme.
- Ek Bharat Shreshtha Bharat
- It was made public on the 31st of October 2015 to mark the 140th birthday of Sardar Vallabhbhai Patel.
- **Ministry/Department: Ministry of Education**

Objectives:

- To Celebrate Unity in Diversity and to keep and strengthen the traditional emotional bonds among the citizens of our Country.
- To encourage the spirit of national Integration through deep and structured engagement among all Indian States, Union Territories, and through a yearlong planned collaboration between States;
- To display the rich heritage, culture, customs, and traditions from either State to enable people to understand and appreciate India's diversity and foster a sense common identity.

Topic 43. FIRST SYLHET-SILCHAR FESTIVAL

Important for subject: Art and Culture



On Friday, the first Sylhet-Silchar Festival to celebrate the close cultural ties among the neighboring regions of India & Bangladesh started in Assam's Barak valley.

- This festival highlights the commonalities between India, Bangladesh, and specifically the Sylheti version of the Bengali language.
- India Foundation, in association with Bangladesh Foundation for Regional Studies, organizes the festival that aims to boost bilateral relations between the countries.
- This festival will bring together prominent people from both sides to discuss matters of mutual interest. It can also showcase opportunities in the education, healthcare and tourism sectors.
- This event will mark 75 years of India's Independence and the 50th anniversary Bangladesh's liberation of Pakistan.
- The event will highlight the local cuisine, arts and crafts, culture, and products which will further strengthen the people-to-people connection between the two regions.

Topic 44. ALL WOMEN BENCH IN SC, 3RD TIME IN HISTORY

Important for subject: Polity

On Thursday, the Supreme Court will have an all woman bench to hear bail and transfer pleas.

- Get more information about the Supreme Court's women bench:
- The current bench includes Justices Hima Kohli & Bela M Trivedi.

- It will mark the third occasion in the history of the Supreme Court that a panel of women judges will hear cases.
- The first such instance occurred in 2013 when Justices Gyan Sudha Misra & Ranjana Prakash Dasai sat together temporarily because of the absence of another judge.
- The second instance of such an incident was in 2018 when Justices R Banumathi & Indira Banerjee adorned a bench.

History of women's representation on the Supreme Court

- Justice M Fatima Beevi was the first woman to be a Supreme Court judge in 1989.
- The current apex court has three female judges: Justices B V Nagarathna and Trivedi.
- Only 11 women have ever been SC judges in its history.
- Justice BV Nagarathana will be Chief Justice in India in 2027, for 36 days.

Current status of women's participation in Indian judiciary:

- High Courts have a mere 11.5% of women judges, while the Supreme Court has three sitting women judges, out of 33.
- Only 17 of the 37 female candidates were recommended by the Supreme Court Collegium to be appointed high-court judges. The rest are still pending with central government.
- Collegium has so far recommended 192 candidates for the high court.
- These were 37. This is 19%, which was women.
- There are only 83 female judges of the 680 high court judges, and about 30% of women judicial officers of the subordinate courts.
- Nearly 175,000 lawyers are employed in the country. Only 15% of them are women.

Topic 45. WHY CONSTITUTIONAL VALIDITY OF J&K REORGANISATION ACT CLAUSE WENT UNCHALLENGED

Important for subject: Polity

On Wednesday, the Supreme Court quizzed petitioners on the reasons for not challenging a specific provision of the Jammu and Kashmir Reorganisation Act that gives the Delimitation Commission power to "carry" the readjustment constituencies in Union Territory after the dilution Article 370 in the former State.

What was the problem?

- A Bench of Justices Sanjay Kishan Kaul and A.S.Oka heard the petition of Srinagar residents Haji Abdul Gani Khan and Mohammad Ayub Mattoo challenging the notification by the Centre in February 2020 establishing the Jammu and Kashmir Delimitation Commission and a new one in March 2021 for the purpose delimitation for Jammu and Kashmir.
- The Petitioners claimed that the only Election Commission, as per Section 60 of the 2019 Act was authorized to conduct the delimitation exercise.
- They also argued that Article 173 of the Constitution prohibited delimitation exercises on the basis the 2011 census. This had to either occur on the basis the 2001 census, or wait for the first census after 2026.
- argued that Sections 60 & 61 of 2019 Act, which defined EC's role in the delimitation process, were contrary to **Section 6**

What was the verdict of the court?

- The court asked why petitioners, without challenging the source of government notifications . Section 62.2, had limited their challenge to the notifications

What was the government's response?

- The government countered by stating that there were two other mechanisms for delimitation of J&K.
- The power to delimit was granted to the EC by Sections 60 and 61. However, the Commission was empowered to delimit the area under Sections 62(2), 62(3).
- Sections 60-64 of the J&K Reorganisation Act 2019 state that the initial division between the UT and Assembly seats is the responsibility of the EC under Section sixty.
- A further indication is found in Section 62, that any adjustment to the constituencies drawn by the EC should only be made by a Delimitation Commission after the first Census after 2026.

What is Delimitation?

- The act to redraw the boundaries of Lok Sabha or Assembly constituencies in order to

reflect population changes is called delimitation. It is done based on the previous Census.

- This is done by the Delimitation Commission. Their orders are legally binding and can't be challenged in any court.

Constitutional provisions:

- Article 8: This gives the Parliament the power to pass a Delimitation Act after every Census.
- Article 170 This allows the States get separated into territorial constituencies according to the Delimitation Act after each Census.
- Once the Act has been in force, the Union government establishes a Delimitation Commission.

What is Delimitation Commission?

- It is appointed by President of India and works with the Election Commission of India.
- Its members include a retired Supreme Court judge or Chief Election Commissioner, a serving or former Supreme Court judge, or an Election Commissioner nominated or elected by the CEC or Election Commissioners in their respective states.
- It is responsible for determining the boundaries and number of constituencies to identify SC/ST seats.
- It is a high-power body whose orders are legally binding and cannot be challenged before any court.
- Four times, delimitation commissions were established: 1952, 1963 and 1973, respectively, under the Acts of 1952.

Topic 46. INDIA ASSUME MONTHLY PRESIDENCY OF UNSC

Important for subject: International relations

The monthly rotating presidency of UN Security Council (UNSC), India, was assumed on December 1. This is the second time that India has held the position in its two-year tenure in the Council as an elected member.

- India was the previous UNSC president in August 2021.

- What are the most significant events under Indian Presidentship.
- Two signature events are scheduled at the ministerial levels under India's December UNSC presidency. They are on December 14 and 15 on Reformed Multilateralism, respectively.
- India will host a "high level open debate" about "Maintenance and Security of International Peace and Security: A New Orientation for Reformed Multilateralism". At the Security Council
- New Orientation for Reformed Multilateralism: (NORMS) proposes reforms to the existing multilateral architecture with the UN as its centre. This will make it more representative and better suited for its purpose.
- The signature event is the high level briefing on the topic "Terrorist Acts -- Challenges and Way Forward" scheduled for December 15.

Learn more about UNSC

- UNSC is the nucleus for the UN system.
- It is the sole body of UN that has teeth to bite.
- UNSC is mandated by Chapter VI of the UN charter to resolve disputes through mediation and to ensure a ceasefire using peacekeeping force.
- Chapter 7 of UN charter gives power to UNSC to impose economic and military sanctions

What is the Counter Terrorism Committee of UNSC?

- The Counter-Terrorism Committee was created by Security Council Resolution 1373 unanimously adopted 28 September 2001, in the wake the terrorist attacks in America.
- It is a subsidiary of the United Nations Security Council.
- It is a 15-member commission that was established to implement UN resolution requiring member states to criminalize terrorist activities and to stop financial aid from being given to terrorists.
- The Counter-Terrorism Committee Executive Directorate was created in 2004 to offer expert advice to the Counter-Terrorism Committee.
- CTED provides technical assistance to member countries and encourages

collaboration at international forums.

Topic 47. G20 PRESIDENCY OF INDIA BEGINS

Important for subject: International relations

India assumed the G20 presidency on the 1st December.

- Learn more about India Presidency.
- India takes over the presidency of G20 starting 1st December.
- The Presidency also marks the start of "Amritkaal ," the 25 year period that began with the 75th anniversary of its independence and continues to the centenary . It is a journey towards a future-oriented, prosperous, inclusive, and developed society, with a human-centric core.
- During India's presidency, guest countries will include Bangladesh and Egypt.
- The G20 logo, which was created using the four colors of India's national flag, features earth sitting on top of a lotus.
- The logo's seven petals represent the seven seas and seven continents that will be joined at G20 India 2023.
- The theme-'VasudhaivaKutumbakam: One Earth, One Family, and One Future' reflects India's pro-planet approach to life and from this and derives the theme of G20 India 2023

G20 logo illuminates 100 monuments

- 100 monuments across the country will be lit with the G20 logo & its colors for seven days as India assumes the presidency.
- To mark the occasion, the list of monuments was compiled by the Archaeological Survey of India.
- The Shankaracharya Temple, Srinagar
 1. The Nalanda Ruins in Bihar,
 2. The PuranaQila complex in Delhi and Humayun's Tomb in Delhi.
 3. The Modhera sun temple and the old Dholavira site, both in Gujarat,
 4. The Tipu Sultan Palace in Bengaluru,
 5. The Hemis Monastery, Ladakh,
 6. The Chola temple in Thanjavur, and

7. The Konark Sun temple is located in Puri.
- Despite being a UNESCO World Heritage Site, the Taj Mahal in Agra will not be illuminated by the G20 logo.

The G20's objectives are:

- To achieve sustainable economic growth and stability in the global economy, it is important that its members coordinate their policies.
- To encourage financial regulation that reduces risks and prevents future financial crises.
- To create a new international financial architecture.

Origin of G20

- The G20 was established in response to financial crises in emerging economies during the 1990s, and also to growing awareness that not enough countries were being represented in international economic discussions and governance.
- In Berlin, Germany in December 1999, Finance Ministers and Central Bank governors from advanced and emerging country of systemic significance met for the first-ever informal dialogue on key issues affecting global economic stability. Finance has been a key issue for global economic stability since then.
- Each year, ministers and central bank governors meet. In 2002, India hosted a meeting with G20 finance ministers. G20 was elevated to the Summit Level in 2008 to address global financial and economic crises.
- G-20 is a forum not an legislative body . Its decisions and agreements have no legal effect, but they can influence the policies of countries and global cooperation.
- G20 membership accounts
- Two thirds of world population.
- 85% global gross domestic products
- 80% of worldwide investment
- 75% global trade
- Contribute 79% to the world's carbon emissions

Structure:

- G20 has no permanent secretariat nor headquarters.
- Informally, the G20 Summit is known as the "Summit on Financial Markets and the World Economy".

How does G20 work?

- The G20 does not have a permanent secretariat. representatives from the G20 countries are known as Sherpas and coordinate the agenda.
- Each year, the G20 presidency rotates among its members. The country that holds the presidency together with the previous or next presidency-holder forms the "Troika".
- Troika assures continuity in the G20 agenda.
- India, Indonesia, and Brazil will form the troika during India's presidency.
- Preparation for the G20 Summit takes place through established Sherpa and Finance tracks. These tracks prepare and follow-up on the issues and commitments made at Summits.
- The Sherpas Track focuses primarily on non-economical and financial issues such as food security and anti-corruption, as well as internal aspects like the G20 procedural rules. The Sherpas are responsible for important planning, negotiation, and implementation tasks. These tasks are performed by the Sherpas.
- Both finance tracks rely on the technical work and substantive work of a number of expert working groups.
- The thematic agenda is also developed by the organization of several Ministerial Meetings, including the Joint Meeting of Finance and Development Ministers and the Labour, Agriculture and Tourism Ministerial Meetings.

Topic 48. TRAI PROPOSAL TO IDENTIFY SPAMMERS***Important for subject: Governance***

Recently, the Telecom Regulatory Authority of India (TRAI) released a consultation paper inviting comments on the introduction of a Calling Name Presentation feature (CNAP).

- Individuals can use the Calling Number Presentation (CNAP), which provides information about the calling party in a similar way to "Truecaller" or "Bharat CallerID & Anti-Spam".

- The main purpose of introducing CNAP is to allow telephone subscribers to make informed decisions about incoming calls, and to reduce harassment from spam callers.

CNAP

- Because subscribers do not know the identity and name of the caller, it is possible for people to ignore calls like these thinking that they could be commercial calls from unregistered Telemarketers.
- It can also lead to situations where genuine calls go unanswered.
- Concerns have also been raised regarding robocalls (automatic phone calls made using IT-enabled systems), spam calls, and fraudulent calls.
- Truecaller's 2021 Global Spam and Scam Report shows that the average spam call per month was 16.8 in India and that users received more than 3.8 Billion spam calls in October.
- Users currently use third-party apps or in-built features to identify spam calls.

About the TRAI

- Telecom Regulatory Authority of India Act 1997 established the Telecom Regulatory Authority of India.
- New Delhi is the headquarters of Telecom Regulatory Authority of India.
- The TRAI consists of a Chairperson and two full-time members.

Functions TRAI:

- The TRAI's function is to make recommendations for the central government regarding matters related to service providers. Revocation of license for noncompliance
- To promote competition and efficiency in the operation telecommunication services, to aid their growth. Establishing standards for the quality of service provided by service providers.
- The TRAI Act of 1997 shall provide timely and official notification of the rates at which telecommunication services are provided within India and abroad.
- The Central Government is not bound by the recommendations of the TRAI.

The Powers of TRAI

- Any service provider can be called upon by the Authority to provide the necessary information or explanations relating to the Authority's affairs.
- The Authority can appoint one or more persons to investigate the affairs of any service provider.
- It can direct any of its employees or officers to inspect any account books or documents from any service provider.
- The Authority shall be empowered to issue directions to service providers as it considers necessary to ensure service providers' proper functioning.

Topic 49. AYUSHMAN BHARAT – PRADHAN MANTRI JAN AAROGYAYOJANA (AB-PMJAY)

Important for subject: Government Schemes

The National Health Authority (NHA), may see a modest increase in its fund allocation in the 2023 union budget.

- Ayushman Bharat – Pradhan Mantri Ja AarogyaYojana AB-PMJAY Ayushman Bharat represents a step towards Universal Health Care. It provides access to Health and Wellness Centers at the primary level and financial protection to enable access to curative care at secondary and tertiary levels by engaging with the private and public sectors.
- Two components: 150,000 000 Health and Wellness Centres were created to provide Comprehensive Primary Health Care, which includes both maternal and child health care, as well as non-communicable disease services, and free essential drugs and diagnostics.
- PradhanMantri Jan ArogyaYojanawhich offers health protection to low-income families and provides secondary and tertiary healthcare.

Pradhan Mantri Jan ArogyaYojana (PMJAY)

- The Prime Minister launched AB-PMJAY on September 23, 2018.
- It is the largest, government-funded healthcare program in the world and has more than 50 million beneficiaries.

- These benefits are available to more than 10.74 million vulnerable families (roughly 50 crore beneficiaries).
- The policy provides coverage up to Rs. It covers up to Rs. 5 lakhs per family for secondary and tertiary hospitalization.
- Five members are required to make up the family limit.
- It covers 3 day pre-hospitalization, and 15 days post hospitalization expenses such as diagnostics and medications.
- PMJAY offers paperless access to and cashless services to the beneficiary at point of service.
- NHA is Ayushman Bharat Pradhan Mantri Jan Arogya Yojana's apex implementation agency.
- PM-JAY offers 1,949 treatments across 27 medical specialties.

Eligibility:

- The household data included is based on the Socio-Economic Census 2011 (SECC 2011), which identifies rural and urban areas with the highest deprivation.
- PM-JAY covers families that were not covered by RSBY, but are included in the SECC 2011 databank.
- Cover under PM-JAY-includes any expenses incurred for the following components of treatment.
 1. Consultation, medical examination and treatment
 2. Pre-hospitalization
 3. Medical consumables and medicine
 4. Services for intensive and non-intensive care
 5. Laboratory and diagnostic tests
 6. Services for medical implantation (where appropriate)
 7. Accommodation benefits.
 8. Services in the food industry
 9. Treatment complications
 10. Follow-up care after hospitalization up to 15 days

Topic 50. PATNA: A FADING CITY ONCE LOVED BY AGE-OLD RULERS AND TRAVELERS:

Important for subject: History

History and Patna:

Patna's original name was Pataliputra, or Patalipattan.

- The name Patna was subject to many changes in its early stages, such as Pataligram and Kusumpur, Patliputra and Azimabad. Eventually, it ended up being the current one.
- According to legend, Pataliputra was established by Ajatashatru Chaudragupta who made it his capital during the fourth century B.C.
- It was known as Pattan, or Patthan. Later it became Patna.
- The village was given the name 'Patali', and then added the word 'Pattan' to it.
- The Greek history of Greece mentions "Palibothra", which may be Pataliputra. Aurangzeb, who temporarily renamed it Azimabad after his grandson Mohammed Azim Prince Azim-us-Shan. He was the Governor of Patna from 1703 to 1704.
- People who follow the Sikh religion consider Patna a holy city. The tenth Sikh Guru, Guru Gobind Singh was born.
- Patna is a favorite place for travellers
- This was the fountainhead for the ancient spring of wisdom and knowledge
- Megasthenes, the Greek ambassador to Greece, stayed in Patliputra under Chandragupta Maurya's reign.
- The city was visited by the famous 3rd-century traveler Fa Hien and Hiuen Tsang in 7th century.
- Fa Hien wrote about this in A Record of Buddhist Kingdoms, where he called Patna "the city of flowers".
- Many notable scholars, such as Kautilya, stayed here. Works like "Arthashastra" were written from this location.
- Ralph Fitch, a British traveler, visited Patna in 1586. He described Patna as "a long and great city with a flourishing cotton, sugar, and opium trade".
- It was described by Francis Buchanan, a Scottish physician, in an unflattering manner. "Difficult to imagine another more disgusting place." M. M.

- Jhumpa Lehi's novel The Namesake also made a brief reference to Patna.

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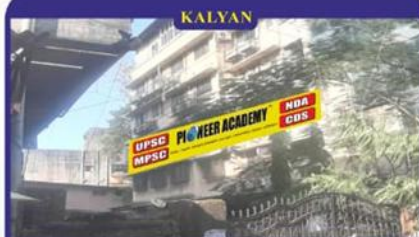
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