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PIONEER ACADEMY's
PATHFINDER
CURRENT AFFAIRS FOR CIVIL SERVICES

INDEX

Topic 1. GENES THAT MADE WHALES GROW TO GIANT SIZES IDENTIFIED

Important for Subject: Science & Technology

A new study has examined the genetic basis of gigantism in whales identifying 4 genes that may play a key role.

- These genes were instrumental in the growth of large size however they also assisted in decreasing the negative effects such as a higher risk of cancer and lower fertility.
- It is believed that the four genetic genes that are named IGFBP7, GHSR NCAPG and PLAG1 are believed to be gaining attention during the evolution of whales that were large.

Growth genes and their implications:

- GHSR is an important gene in the release of the growth hormone through the pituitary gland as well as body weight, the metabolism of energy, hunger, and the accumulation of fat.
- It is also involved in the control of cell proliferation as well as programmed cell death. Tumors are primarily caused through the runaway growth of cells.
- IGFBP7 is an important gene that plays a role in the process of promoting cell division and growth. There is evidence that it functions as a tumor suppressor in breast, prostate lung, and colorectal cancers.
- NCAPG A gene linked to growth in human donkeys, horses, chickens, pigs, cattle and cattle is related to an increase in body size in addition to weight gain, cell proliferation, and life cycle.
- PLAG1, a gene associated with body development in pigs, cattle and sheep.
- It is involved in the development of embryos and the survival of cells.

About Cetaceans:

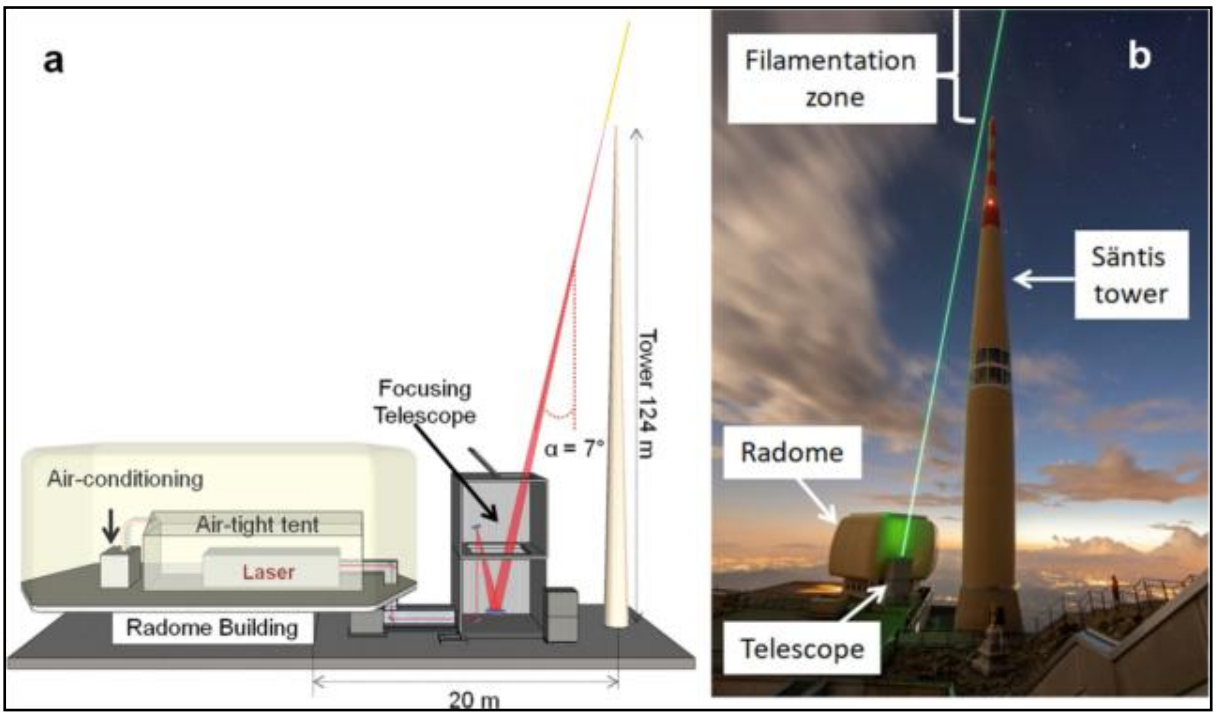
- Cetaceans this marine mammal family that includes whales and dolphins and porpoises evolved about fifty millions of years ago from a vaguely similar to wolves, land-based ancestors who comprised a mammalian assemblage known as artiodactyls that includes cows, sheep, pigs, and other animals.
- The fin, blue, bowhead grey, humpback left and sperm whales comprise some of the largest living creatures in the present. In reality Blue Whales have been described as

the most well-known creature on Earth and bigger than even the largest of dinosaurs.

- Blue whales can grow to about 100ft (30 meters) in length, fin whales around 80 feet (24 meters) Bowhead and sperm whales around 60 feet (18 meters) as well as humpback and right whales approximately 50ft (15 metres) as well as grey whales approximately 45 feet (13.5 meters).
- The gigantism that is present in the cetacean lineage is relatively recent estimated to be around five million years old. Prior to that, there were species with massive dimensions, such as Basilosaurus however these were rare, and most cetaceans could not have a length of more than 10 meters.
- Basilosaurus was a toothed predator dating to around 40 million years ago was most well-known early whale. The lineage of baleen whales extends to about 36 million years old beginning modestly in the size.

Topic 2. A POWERFUL LASER IN THE SKY HELPS DIVERT LIGHTNING STRIKE

Important for Subject: Science &Technology



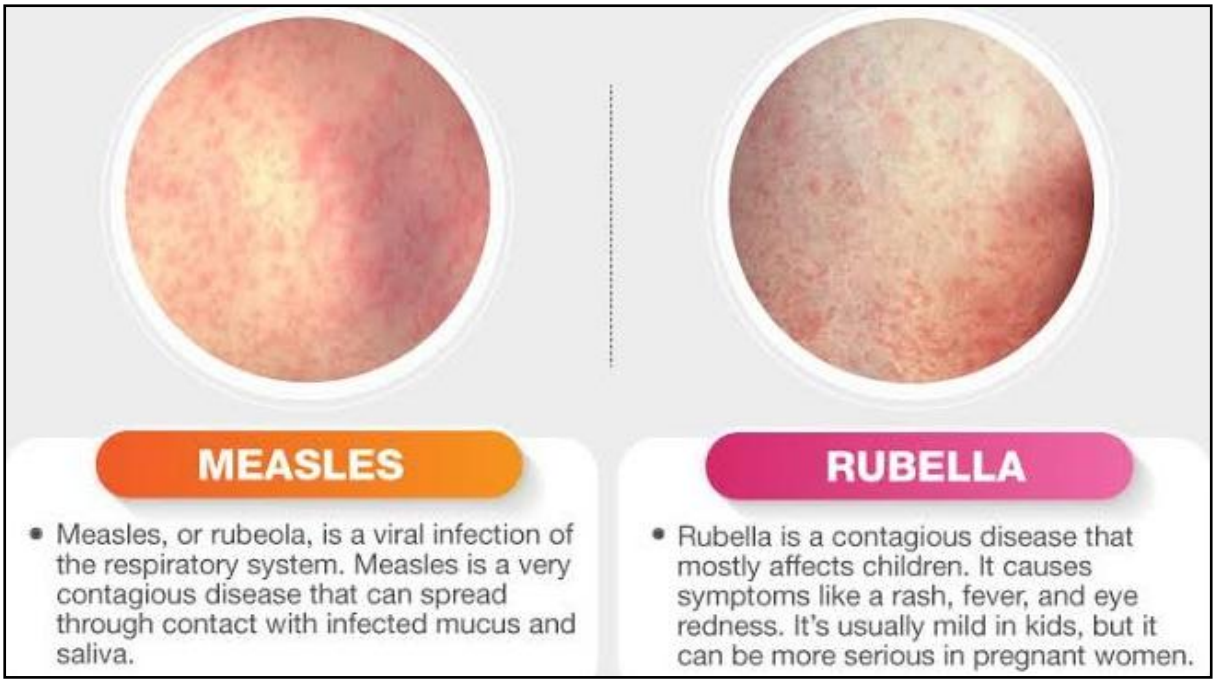
A laser's power can grab the lightning bolt and redirect it's path across the sky.

What is the process?

- The strong laser directed at the sky could result in an real lightning rod and alter the direction that lightning strike.
- Functioning in the role of a virtual moveable rod an laser beamdirected toward the sky might provide a different option.
- The concept of using high-intensity laser pulses to direct lightning strikers has previously studied in laboratory conditions.
- However, there is no field test that was previously reported to demonstrate the lasers guiding lightning.
- The findings of the researchers were verified using the high frequency electromagnetic wave created by lightning to identify the lightning strikes.
- A greater detection rate of X-ray bursts during the strikes also proved that they were successful in guiding. One strike was recorded directly by high-speed cameras and showed to follow the laser's direction for more than 50 metres.
- The research findings could help to improve lightning protection strategies for vital infrastructure, including airports, power stations, as well as launch pad launches.

Topic 3. INDIA'S PLAN TO ERADICATE MEASLES, RUBELLA

Important for Subject: Science and Technology



India's aim of eliminating Measles as well as Rubella:

- India had set a goal to remove measles and rubella (MR) by 2023. After having

missed the earlier date of 2020 due to a myriad of reasons, and exacerbated by the disruptions caused by the spread of the disease.

- An earlier goal that was scheduled to be achieved in 2015. was also not achieved.
- In the year 2019 when India decided to set a goal of eliminating rubella and measles in 2023, in anticipation that the 2020 target might not be achieved.

The seriousness of Measles and Rubella virus:

- According to WHO the measles disease is among the most contagious human-borne viruses that kills more than one million children every year across the globe as well rubella is the most prevalent birth defect preventable by vaccine.
- Each of the measles virus and rubella are avoided with just two shots of safe, effective vaccine.
- In the last two decades over the past two decades, measles vaccine has measles vaccination has prevented around 30 million deaths around the world.
- The symptoms are a rash and fever.
- Measles is a disease with a high mortality rate, the rubella infection in pregnant women can be detrimental to the foetus, leading to birth defects.

The outbreak of measles within Maharashtra:

- There was a rash measles outbreak in Maharashtra especially in Mumbai in the month of October 2022.

Methods to eliminate this MR disease:

- Between the period of 2010-2013, India carried out the staged measles catch-up vaccination for children aged between 9 months and 10 year old in fourteen States in which 120 million children.
- Mission Indradhanush was established during 2014 to increase the number of vaccinations given to those who were not vaccinated.
- In 2017-2021, India adopted a national strategy for measles, rubella and other diseases and also introduced a rubella-containing vaccine (RCV) in the regular immunization programmer as well as launching a measles-specific rubella supplementary vaccination activity (SIA) recapture campaign.

- It also moved from the surveillance of outbreaks to cases-based acute fever and rash surveillance and has more than tripled the number laboratories within the measles-rubella system.

Can the goal be achieved?

- The targets will be simpler to reach In states like Tamil Nadu and Kerala because of the strong immunization system.
- In other States further efforts should be made to assist in getting to the goal.

Topic 4. TRADEMARK VIOLATION

Important for Subject: Science and Technology

The Delhi High Court decided on Friday, dismissing an action for trademark infringement filed by the world's largest fast food chain against Suburb which is a restaurant in Delhi.

- The Delhi High Court has ruled that Subway can't declare "exclusivity" or "monopoly" over "sub", the first element in its brand name "Subway", when used in relation to restaurants serving sandwiches and other similar products.

Trademark

- An trademark can be described as a mark capable of separating the products or services of a particular company in comparison to other businesses.
- The protection of trademarks is provided through Intellectual Property Rights (IPR).
- In India trademarks are subject to The Trade Marks Act 1999 that was modified in the year 2010.
- It legally distinguishes a particular product or service from other products that are similar to it and acknowledges the ownership of the original company of the trademark.
- The Act provides protection for trademarks recorded at the Controller General of Patents, Designs, and Trademarks, commonly referred to as the registry of trademarks.
- An trademark's validity is 10 years and it is possible to renew the trademark by the owner at any time for 10 years.
- It is a symbol of origin that identifies the business concerned as the source of its

products or services.

What Constitutes a Trademark Violation?

- The use of a trademark registered without the authorization of the entity who owns the trademark is considered to be a violation or an infringement of trademark.
- Infringement of trademarks In India can be defined in Section 29 in the Trademark Act 1999.
- There are a variety of ways that a trademark can be infringed including deceitful similarity or passing off (Say that a logo of a company is misspelled in a way that's difficult for a consumer to recognize).
- In such instances the courts will have to decide whether this could create confusion for consumers who are unsure of the difference between the two.
- In these cases the infringing product need have no similarity, but a similarity in the character, nature and performance of the competitors has to be proven.
- For instance, Cadila Healthcare Limited vs Cadila Pharmaceuticals Limited.
- There are two kinds of infringement, indirect and direct infringement.

Direct Infringement

- An unauthorised personThis is an individual who isn't the owner or licensee of the trademark registered.
- 'Identical' or "Deceivingly similar"' - the test to determine if marks are identical or not through determining whether there's an opportunity of confusion among the general public. If consumers are likely to confuse the two trademarks, then there's an violation.
- Registered trademark you are not able to violate a registered trademark. If it is not a registered Trademark the common law principle of passing off is applicable.
- Goods or Services- To prove infringement, the products or services offered by the infringer have to be similar or identical to the items that are registered
- Trademarks represent.

Indirect infringement

- Indirect infringement is an common law rule that holds accountable , not just those

who directly infringe, but also the persons who are able to induce direct infringersto do the infringement.

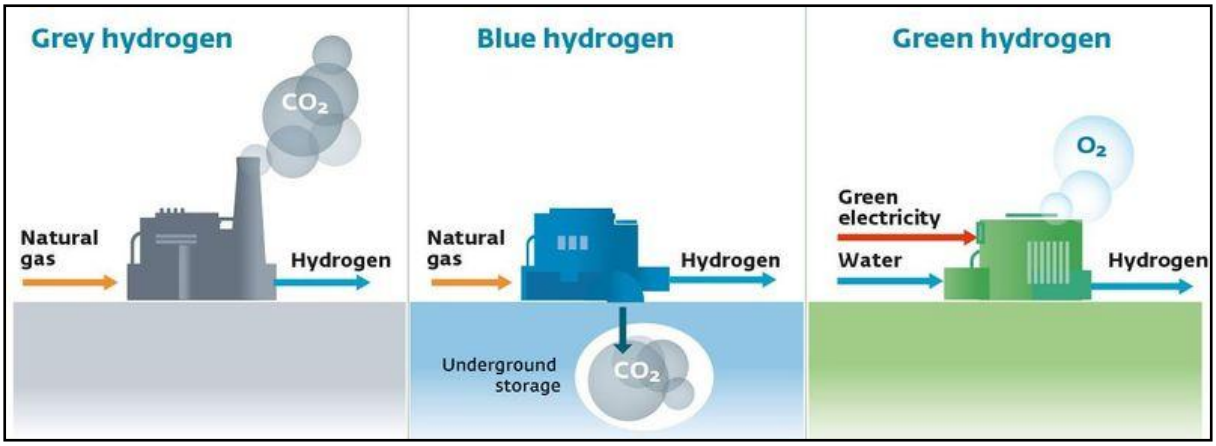
- Indirect infringement, also known as secondary liability. It is comprised of two types: contributory infringement and vicarious liability.
- **A person can be held accountable for an infringement of the contributory principle in two scenarios:**
- If a person is aware of the infraction
- A person who materially aids or encourages the infringer directly to do the infringing.
- A person is legally accountable under the following situations:
- If the person is able to exercise the power to influence what happens to the person who is directly infringing.
- In the event that a person receives an income from the violation.
- If a person is aware of the violation and contributes to the infringement.

Delhi HC's Ruling in the Case

- The HC did not examine the question of passing off because Subway is a separate entity, and Subway must prove that an "person of average intelligence" is confused between the products and services that are offered by Subway as well as Suberb.
- The passing off of trademarks is a tort of common law that protects the reputation and goodwill of the owner of the trademark against damages caused by misrepresentation made by the defendant.
- "Sub" is used as an abbreviation of "submarine", which represents an extremely well-known type of sandwiches with a long body.
- So, Subway cannot claim "exclusivity" or "monopoly" over "sub" the first element of the trademark "Subway".
- There was no resemblance between the two parts of the mark - "way" and "erb".
- Therefore there was no chance of confusion among the public.
- Since the defendants had apprehensively accepted to alter the font, the lettering, and color scheme there was no claim of false similarity was presented.

Topic 5. HYDROGEN AS FUEL

Important for Subject: Science and technology



About Hydrogen:

- Hydrogen is a gas that is colourless, smell less and tasteless gas that is flammable.
- Hydrogen happens to be the most light and prolific chemical element found in our universe. It is the substance that the stars are mostly composed of. It is light enough that around 3 cubic meters is released from the earth's atmosphere each minute.
- It contains only one proton and one electron, and zero neutron but only a few hydrogen atoms contain one neutron. This kind of hydrogen is referred to as Deuterium. In fact, fewer even contain 2 neutrons and these are known as Tritium.
- When the atoms of Deuterium connect with oxygen's atom, 'heavy water' is created, used in nuclear reactors as a cooling agent. Similarly, Tritium water can be a poison. A rare hydrogen atom might contain more neutrons.
- It also contains a large amount of power. One gram of hydrogen contains 140 megajoules (MJ) of power in comparison diesel and petrol carry around 46 MJ. This makes it a decent fuel for cars.

Type of Hydrogen Fuel:

- Hydrogen is produced by various sources like natural gas and biogas, nuclear power and renewable energy sources like wind and solar. Based on where it comes from, the, the type of hydrogen, the quantity varies.

Grey Hydrogen:

- India is the largest producer.
- Extracts from hydrocarbons (fossil natural gas, fuels).
- The product is CO2.

Blue Hydrogen:

- Derived through fossil fuels.
- As a product: CO, CO2
- By products are stored and captured thus superior to gray hydrogen.

Green Hydrogen:

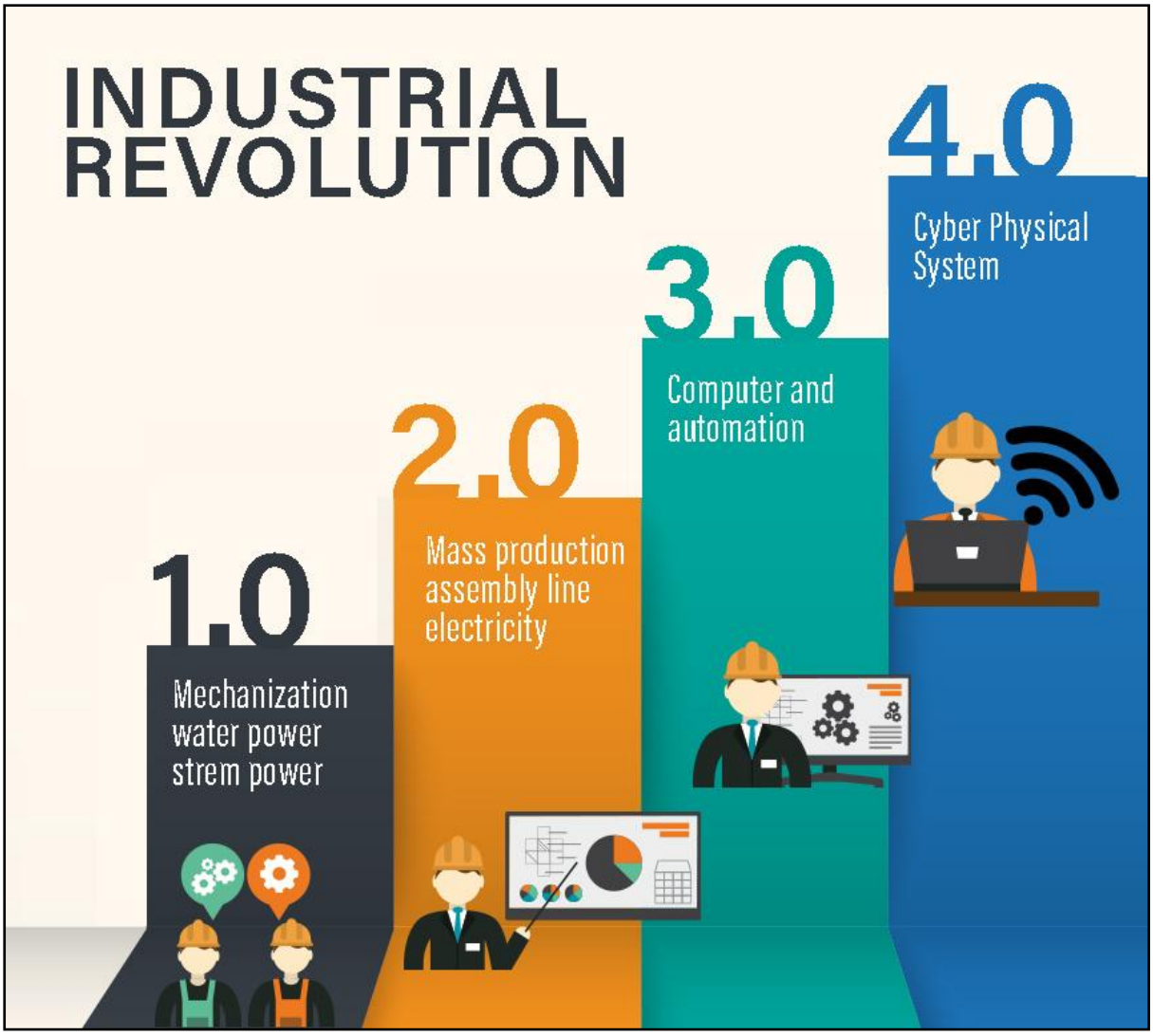
- When hydrogen is produced by processes that don't emit greenhouse gases the hydrogen produced is referred to as 'green hydrogen'.
- Created by renewable energy sources (like Solar, Wind).

Methods of green production of hydrogen:

- Green hydrogen: Biomass pathway: Green hydrogen can be created through the gazification from biomass.
- Electrolysis: The splitting of water into oxygen and hydrogen is the best and most reliable method to produce green hydrogen. It involves providing electrons (through electricity) to disrupt the tight bonds to two hydrogen atoms and one oxygen atom so that hydrogen is separated from the oxygen atom.
- Electrolysis technology that is well-established in the market, namely "alkaline electrolysers," "proton exchange membrane' (PEM) technology, solid oxide electrolysers and anion exchange membrane (AEM) electrolysers, which are the latest technology

Topic 6. FOURTH INDUSTRIAL REVOLUTION: '4IR CRITICAL FOR INDIA'

Important for subject: Science & Technology



Fourth Industrial Revolution:

- The Centre for the Fourth Industrial Revolution in India (C4IR) was established in October 2018 to examine the importance of the emerging technologies in various industries and to address the problems that may arise when we embark on this process.

Three pillars on which the work's core is:

- The first is 4IR technology including artificial intelligence and the Internet of things, blockchain and many more.
- The other focus is the public-private partnership. India recently announced drone

services.

- The third 3rd pillar is the third pillar, which is a multi-stakeholder collaboration with industry, the government and start-ups civil society and consumers to ensure that there is an inclusive approach.

The history of The Industrial changes:

- The First Industrial Revolution made use of steam and water to improve production.
- The Second utilized electric power to produce mass production.
- The Third utilized electronic devices and information technology to streamline production.
- Today, a fourth Industrial Revolution is building on the third Digital Revolution that began to take place from the beginning of last century.
- It is distinguished by a convergence of technologies that blurs the distinctions between the digital, physical and biological realms. Example: Artificial Intelligence (AI) robotics as well as robotics, the Internet of Things (IoT) three-dimensional printing (DPR), genetic engineering quantum computing, and many other technologies.

4IR in India:

- In India, the Industrial Revolution 4.0 is built in Big Data and Artificial Intelligence.
- Fourth revolution anticipated to affect all Indian sectors from small towns to large industries.
- It will assist in providing healthcare that is affordable and better by using AI-driven diagnostics, personalised treatment, etc.
- It can increase the farmer's earnings by introducing new technologies to aid in improving yields, improved crop growth and advice in real-time for pest detection, the most advanced method of detecting attacks, and forecasting of price of the crop to inform the sowing methods.
- It will aid in strengthening infrastructure and increase connectivity between villages and cities, thus bridging the gap between urban and rural.
- The comfort of life and the ease of doing business will be improved by the application of smart technology.

- Its smart city project drone policy, drones, Gati Shakti scheme, and many more are evidence of the revolutionary influence on the way that policy makers make decisions in the country.

Challenges are:

1. A new form of inequality i.e. digital inequality.
2. Rising unemployment
3. Digital divide, digital inaccessibility
4. Privacy breach and security threat
5. The process of making policy is challenging.
6. Security threat

Topic 7. GM FOOD DRAFT REGULATIONS FAVOUR INTERESTS OF BUSINESSES, NOT CITIZENS: GM-FREE COALITION WRITES TO FSSAI COALITION FOR A GM-FREE INDIA:

Important for subject: Science & Technology

It is a vast informal national network of organizations and individuals who are concerned about the release of environmental pollutants by GMOs.

- **Goal:** The coalition is promoting and campaigning to maintain India GM-Free and also to move our agriculture toward a sustainable way of life.
- The group is opposed the release into the environment that is the result of Genetically Modified Organisms (GMOs) given the risk of adverse health and environmental effects and being aware that GMOs also snatch away vital research, as well as other resources from longer-lasting solutions.
- Coalition for a GM-Free India has expressed displeasure and concern regarding FSSAI's Food Safety and Standard Authority of India's (FSSAI) draft regulations for genetically altered (GM) food items.
- They claimed that the rules are ignoring citizens' rights in favour interest of the business community.

The concerns raised by the proposed regulation are:

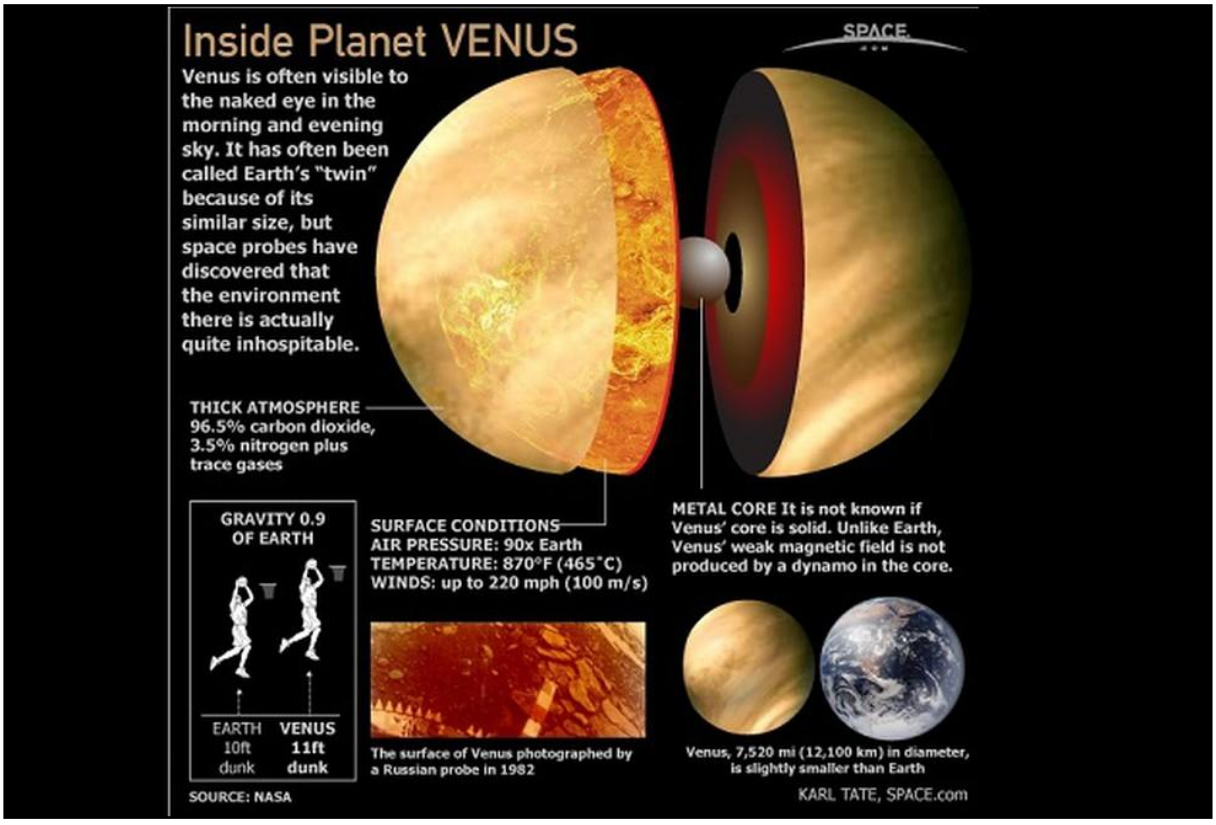
- With the proposed regulations FSSAI suggested that it must obtain authorization from

the regulator prior to the beginning of the process to produce, sell and import food items or other ingredients that are derived using genes modified by species (GMO).

- Additionally the above, every GMO food items that contain at least 1 percent or more of GM ingredient when taken individually, must be labelled with the words "contains genetically modified organisms'.
- There was no requirement for a comprehensive, long-term and independent testing program.
- It doesn't have any provision for an independent analysis of data or public review.
- The proposed regulations have been ignoring GM food products even though GM feed (animal feed) is also a threat to the safety of humans in the food chain.
- The regulations in the draft only address the food authority who decides on applications and does don't have expert bio safety professionals.

Topic 8. SHUKRAYAAN MISSION

Important for Subject: Science and Technology



A space science program recently stated there was a possibility that Indian Space Research Organisation has not yet receiving acceptance from authorities from Indian Government for

its Venus mission, and that the mission may in the end be delayed until 2031..

About Shukrayaan-1

- It's also known as it the Venus Mission.
- Shukrayaan I mission will be an orbiter Shukrayaan I mission will be an orbiter mission.
- Its current scientific payloads include a high-resolution synthetic aperture radar, as well as ground-penetrating radar.
- The spacecraft is expected to examine the volcanic and geological activity of Venus emission on the ground and in the air, the speed of wind, cloud cover and other characteristics of the planet due to circular orbit.
- Launch windows that are optimally positioned between Earth towards Venus occur at least once in 19 consecutive months.

Important details about Venus

- Venus is sometimes referred to as "Earth's twin" because of their dimensions and shape, however Venus is extremely hot on the surface and a toxic, dense atmosphere.
- It spins extremely slowly around its axis. One day on Venus is more than 243 Earth days.
- The dense atmosphere of Venus holds heat and creates the greenhouse effect that is sweeping across the planet - which makes it the hottest planet in the solar system.
- Phosphine is a potential indicator of microbial activity was observed in the cloud of Venus.
- As opposed to other planets in the solar system Venus rotates counter clockwise around its axis.
- Other Venus Mission

VERITAS:

- NASA's VERITAS also known as Venus Emissivity, Radio Science, In SAR, Topography, and Spectroscopy will be one of the first NASA spacecraft to study Venus since the 1990s.
- The spacecraft is scheduled to launch before the end of the end of December 2027. It

will travel around Venus collecting data to discover how the routes between Venus as well as Earth diverged, as well as how Venus has lost its ability to be a viable world.

- VERITAS is the very first NASA spacecraft to study Venus, Earth's twin planet Venus in the late 1990s. The spacecraft will unravel details of the habitable planet on Venus and collect information to discover how the routes that led to Venus as well as Earth diverged.

DAVINCI:

- NASA's DAVINCI mission is set to begin in the latter half of 2020s. After exploring the uppermost part of Venus's atmosphere DAVINCI will launch probes onto the surface. In its one-hour descent the probe will make thousands of measurements and take high-quality images of Venus's surface.
- The probe might not make it through the landing however, if it survives it can give you a few minutes of extra research.

EnVision:

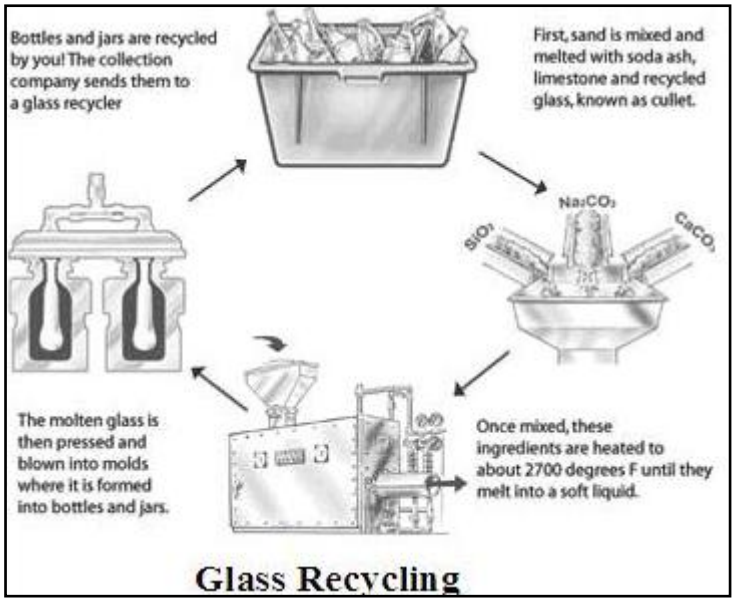
- The European Space Agencyhas chosen En Vision to carry out detailed observations of Venus. As a major collaborator in the project NASA will provide its Synthetic Aperture Radar, also known as Ven SAR which will make high-resolution measurements of Venus' surface characteristics.

The previous missions of Venus

1. Magellan – NASA mission, 1994.
2. Venus Express- European mission
3. Akatsuki- Japanese mission

Topic 9. RECYCLED WASTE GLASS CAN HELP SOLVE SAND SHORTAGES

Important for subject: Science & Technology



The waste glass -is a by-product made from the natural sand is an alternative to natural sand.

- The crushed waste glass could exhibit geotechnical properties (properties) like sand.

A substitute for sand

- Recycling crushed waste glass to replace traditional sand may provide an added benefit, solving the environmental issues of natural sand depletion as well as the recycling ever-growing waste glass.
- The geotechnical properties of the crushed waste glass is comparable, or even better than traditional construction sands.
- The benefits include The smart geo-material can be recycled as glass waste and reducing the need for landfills, preserving natural resources, and advancing towards a circular economy.

Natural resource extraction:

- Natural aggregates like manufactured sand or gravel can be used in numerous applications.
- Presently building is currently the world's largest user of natural resources.
- Consumption of aggregates are anticipated to grow at the rate of 5 per cent annually within India.

- The main sources of natural construction aggregates are crushed stone, gravel, and sand.

There are ecological issues in addition:

- The transportation and extraction of aggregates leaves an carbon footprint that is detrimental to our natural ecosystem.
- The extraction of natural sand could be harmful to aquatic organisms and can ruining marine habitats and ecosystems.

Topic 10. ALIEN PLANTS GROWING TOGETHER THREATENING TIGER HABITATS: STUDY

Important for Subject: Environment

A variety of alien invasive plants that grow together could have a negative impact on the biodiversity of the habitats of tigers.

- The study is carried out by Wildlife Institute of India.

Alien species pose an encroachment on Indian biodiversity:

- The plants could create strain on forage plant species native to the area, and also drive away wild herbivores, their food source for big cats.
- The biodiverse ecosystems of India are in danger by a myriad of plants that are alien to India, such as Lantana, Camara, Parthenium, Hysterophorous, Prosopis, juliflora, etc., were developed by the British during British colonization.
- Lantana is the only one that has overtaken 44 percent of the forests of India.
- Invasive plants that co-occurlike Lantana, Ageratum conyzoides, Pogostemon benghalensis, etc and have a greater effect on the entire ecosystem than the individual effects, causing ecological homogenization in the invaded areas.
- It affects the soil's nutrients.
- The native wild herbivores such as Chital and Sambhar didn't like the common plants found in the areas of invasion.

What can the study tell us?

- A decrease in the availability of forage of herbivores, such as sambar or Chital, both

of which are important prey species for leopard, tiger and dhole in this region, could threaten the food supply of carnivores living in invasive areas.

- It's a sign of an 'invasion-centric ecological forest'.
- It is crucial to prioritise restoration projects in the least infested areas to protect the native biodiversity, and gradually increase the restoration of these habitats.
- The study underscored that it was crucial to invest investment in scientific restoration within India to counteract the impact of invasions of invasive species.

Topic 11. SEEING FEWER STARS? LEDS MIGHT BE INCREASING LIGHT POLLUTION

Important for Subject: Environment

The night sky is brightening almost 10 percent every year over the past decade, drastically decreasing the visibility of stars around the world.

- Therefore, 30% of all stargazers around the world have been denied having a clear view of stargazing objects.
- With this rate of change that a child born into the area in which 250 stars were visible will be able to only see around 100 at the age of 18.

How do you define light pollution?

- It is also referred to by the name of photo pollution can be defined as the presence or absence of human-made lighting in the night time environment.
- It's exacerbated by the excessive and unintentional use of light. However, even light that is properly used alters the natural environment.
- As a significant side effect of urbanization and its effects, it is blamed for harming the health of people, disrupting ecosystems and ruining the beauty of our surroundings.

Light sources that cause increased pollution:

- The increased light pollution is because of the rising populations, the expansion of settlements, and the introduction of advanced lighting technologies like light-emitting diodes (LED).
- The market share of LEDs in the world grew to 47 percent in 2019, up from less than 1 percent in 2011.

- The shift from traditional lighting to LED led to the utilization of more light and longer periods of time.
- The brightness of the sky has increased by 9.6 percent yearly. This is considerably greater than satellite-based estimates which indicate that sky brightness has increased by 2 percent per year from 2012 and 2016.

What are the negative effects from Light pollution?

- Light pollution is a source of environmental consequences, with natural light cycles being disrupted through artificial lighting introduced to the evening atmosphere.
- A higher level of sky light can impact sleep patterns of humans.
- Alongside the danger of 30 per cent of vertebrates which are not nocturnal and over 60 percent of invertebrates which are non-nocturnal, artificial light also can affect microorganisms as well as plants.
- It is threatening biodiversity by changing habits of night, for example, patterns of migration or reproduction of a variety of species, including amphibians, insects, fish bats, birds, and many more animals.

Recommendation:

- Utilizing lights only how and when required, and avoiding lights that emit ultraviolet light or cool white (shades of blue) can help.

Topic 12. NATURE BASED SOLUTION

Important for Subject: Environment

Natural-based strategies (NbS) is a hotly debated term has gained significant political support in 2022, despite issues and concerns about the inability to implement the protections of human rights and biodiversity in the current and future NbS initiatives have grown more popular with Indigenous communities and non-governmental organizations.

About Nature based solutions:

- In March 2022, the N. Environment Assembly (UNEA) passed an agreement to adopt a multilaterally-agreed-upon definition of NbS.

It defined it as:

- "Actions to protect, conserve, restore, sustainably use and manage natural or modified terrestrial, freshwater, coastal and marine ecosystems, which address social, economic and environmental challenges effectively and adaptively, while simultaneously providing human well-being, ecosystem services and resilience and biodiversity benefits".

- For example For instance, the rehabilitation and/or protection Mangroves along the coastline employes the power of nature to meet various objectives.
- Mangroves help to reduce the effects of wind and waves on coastal cities or settlements and help to sequester CO2.
- They also offer areas for nursery zones to marine animals which can form the foundation of sustainably-based fishing that local populations could rely.
- Recent international policy instruments have recognized NbS and include NbS is recognized in KunmingMontreal Global Biodiversity Framework adopted in December 2022.

Features of Nature-based Solutions:

- Respect the nature conservation standards (and guidelines);
- It can be used on its own or integrated in conjunction with other solutions to social issues (e.g. engineering and technological solutions);
- Depend on the site-specific environmental and social contexts that incorporate the local, regional and traditional information;
- Contribute to society with fairness and equal way, and in a manner that encourages transparency and wide participation.
- Keep alive the biodiversity, both cultural and biological and the capacity of ecosystems to develop with time.

The application is done at an overall scale

- Recognize and resolve how to balance in both the production of only a few instantaneous economic advantages to development and future alternatives for the creation of the entire ecosystem of services
- They are an integral component of the overall structure of policies, as well as measures or actions to deal with a specific issue.
- Category of the NbS approaches Examples of Ecosystem restoration methods

1. Restoration of the ecosystem
2. Ecological Engineering
3. Forest landscape restoration
4. Ecosystem-specific approaches that are specific to the issue

5. Ecosystem-based adaptation
6. Ecosystem-based mitigation
7. Services to adapt to climate change
8. Risk reduction through ecosystems
9. Infrastructure-related approaches
10. Natural infrastructure
11. Green infrastructure
12. Ecosystem-based approaches to management
13. Integrated coastal zone management
14. Water resources management integrated
15. Ecosystem protection methods
16. Conservation strategies based on areas, which include protection of areas

International Support for NBS:

- NbS was quickly gaining prominence over the last year. It was even included in the final decision on the cover at the COP27 U.N. climate summit that was held in Egypt It was also a prominent part of two goals that comprise The Kunming-Montreal Global Biodiversity Framework (GBF) during the 2015 COP15 U.N. biodiversity conference in December, which was held in Canada.
- UNEA resolution also urged the N. Environmental Programme (UNEP) to assist in the development of nature-based solutions that protect people's rights as well as Indigenous peoples.

NBS Concerns:

- The possibility of misuse and misuse of natural-based solutions as a green HTML2 washing mechanism is a possibility for misuse and abuse by businesses as a Green washing method for businesses to offset their existing carbon emissions, without reducing them, as well as a mechanism for market to make nature more commodifiable and place prices on the natural world.
- Countries like Bolivia and India are concerned that the inclusion of this clause within the CBD text and its increased scale as a major policy could allow for land grabs and commercialization of nature.
- It could be a mistake to portray activities that are not eco-friendly as if they are in

compliance with natural-based solutions.

- For instance, promoting monocropping or single species plantation forest can be characterized as afforestation. However, it could result in more social and ecological harm.

Topic 13. KILLED IN COLD BLOOD: AMPHIBIANS AND REPTILES ARE BEARING THE BRUNT OF CROP INTENSIFICATION

Important for Subject: Environment

Reptiles and amphibians:

- These cold-blooded species, together referred to as herpeto fauna are able to provide a wide range of ecological benefits.
- Toads and frogs for example, serve as biological agents for control by eating pests of crops.
- A variety of salamanders and tadpoles from frogs aid in preventing mosquito and mosquito-borne illnesses by feeding on larvae.
- They also assist in enhance soil quality and aeration. They also aiding to aid in dissemination of seeds, and aid help in the pollination process--there are nearly forty species of Lizards such as geckos and skinks which are effective pollinators.
- **Herpetofauna in danger include:** increased use of fertilisers and pesticides the conversion of land, changes in cropping systems, and the diminished proportion of natural plant life.
- The Anurans are a diverse group of 1,532 varieties (frogs) along with 825 reptile species around the world are considered to be critically threatened, endangered and endangered because of agriculture and its management practices.
- They are the most at risk by India which is followed by USA and China.

What are the reasons they're being threatened?

- Because they are cold-blooded, They are highly sensitive to microclimates (with an extremely narrow range of soil moisture and light flux, as well as moisture acidity, air, and temperature of the soil) as well as small-scale habitats (they have tiny habitats, such as grass cover, and a low dispersal range; the maximum lifetime

dispersal range for toads and frogs is twelve kilometers). This makes them especially vulnerable to the intensification of agriculture.

- Researchers discovered that in areas in which the diversity of the Frog population is less The numbers of beneficial arthropods have decreased because of interguild predators--a phenomenon in which multiple species feeds on the same food source, and thus, the species compete for each others.

Topic 14. WETLAND CONSERVATION IN MP LIMITED BY LOW NOTIFICATION OF WETLANDS

Important for Subject: Environment

The State Wetland Authority had sent an idea at the State Government seeking the notification of six lakes in accordance with Wetland Rules 2017 about a year earlier.

- Furthermore, the state submitted an extensive list of more than 120 wetland areas within Madhya Pradesh to the union government for inclusion in the rejuvenation plan to protect the wetlands under the National Program for Conservation of Aquatic Eco-system (NPCA).
- The idea was to inform these lakes to aid in conservation, and also their names could be considered to be considered for Ramsar sites' designation during the next nominations round.
- Although it is an inseparable process that does not depend on the Ramsar designation, it is a crucial to ensure the preservation in the designated Ramsar sites.
- Notifications of wetland by the state governmentt is the most important step toward conservation, as it creates a map that defines areas of the wetland as well as the identification of its ' area of impact and 'zone of influence', which is required by the Wetland Rules 2017.

Wetland (Conservation and Management) Rules 2017

- The Wetlands (Conservation management) Regulations 2017 increased the management focus of wetlands away from an authority central to state authorities.
- The rules stipulate an advisory function of the National Wetland Committee, to advise state bodies in the management of integrated wetlands based on the wise-use principle and to monitor the progress made in integration of management at Ramsar

Convention sites among other tasks.

- The Wetland (Conservation and Management) Rules 2017 rules stipulate the creation of the State Wetlands Authority in each state and union territory.
- State Wetlands Authority for every State or union territorial area that is led by the state's environment minister, and comprise a variety of officials from the government.
- They will also comprise one expert in each of the areas of wetland ecology, hydrology landscape planning, fisheries, and socioeconomic, to be chosen from the state's government.
- It offers guidance on various aspects such as identifying wetlands to be eligible that require notification pursuant to the rules, defining Wetlands, Wetland Complexes or zones of impact, preparing of a brief document, preparing an agenda of the activities that need to be permitted and controlled in the constitution and operational aspects for the Wetlands Authorities among other issues.
- The guidelines recommend to ensure that managing of every wetland that is notified be supported with the "integrated management plan" which includes strategies and procedures to achieve "wise use" of the wetland, and also outlines the goals of management for the site.

Zone of Influence for the wetlands

- The zone of influence for wetland is a region that is where the development activities are most likely to result in negative changes to the structure and function of the wetland.
- It is therefore vital to align the development plan inside the influence zone ecosystem services and biodiversity in the wetland.

Activity that is prohibited

- The rules of 2017 had laid out the activities that are prohibited in notified wetlands like the establishment of any type of industry or expansion of existing industries, manufacturing or handling, the storage and disposal of demolition and construction solid waste and discharge of wastes that have not been treated and effluents from industrial villages, cities, towns as well as other settlements for humans.

Regulated Activities

- Based on the specific conditions of each site states and union territories could think about expanding the prohibited activities list in a wetland that is notified, and ensuring that the activities are within a notified wetlands and its area of influence that are within a specified area or threshold that is not likely to cause a negative alteration to the ecology of the wetlands and could be placed in the category of regulated.
- It will be determined on a case-by- base for each wetlands and its influence zone.
- For instance, actions such as subsistence-level harvesting of biomass, sustainable culture practices in fisheries and plying of non-motorised vessels, when regulated, are unlikely to cause negative changes to wetlands.

National Program for Conservation of Aquatic Eco-system (NPCA)

- The NPCA is an environmental conservation program for lakes and wetlands.
- The national Wetlands Conservation Programme has been operating since 1986.
- In 2013, the program has been referred to as the National Plan for Conservation of Aquatic Ecosystems.
- It is an initiative that is backed by the Central government that is that is currently it is being carried out by MoEFCC and was created by combining two programs: the National Lake Conservation Plan and the National Wetlands Conservation Programme.
- According to the NPCA scheme under the NPCA scheme, the central assistance is determined by suggestions from state governments and is in line of the guidelines as well as budget allocation.
- The plan encompasses a variety of actions such as intercept, diversion and treatment of water shoreline protection as well as lakefront development and in-situ cleaning.

Aim & Objectives

- Its goal is to achieve an integrated conservation and restoration of wetlands and lakes in the purpose of achieving the desired enhancement in water quality as well as improving the ecosystem and biodiversity through a multidisciplinary and integrated method that has an agreed regulatory framework.
- The scheme will aid in reducing pollution and improve biodiversity. It will also

improve the quality of products and services offered by these bodies of water to stakeholders.

Wetland policy in India

- At a global level, India is party to the Convention on Wetlands, called the Ramsar Convention an intergovernmental treaty that creates the framework for action at the national level as well as international cooperation for conservation and wise utilization of wetlands and the resources they provide.
- At a national level, the wetland areas in the country are protected under The Environment (Protection) Act, 1986.
- The National Environment Policy, 2006 recognizes the ecosystem benefits provided by wetlands. It emphasizes the necessity of establishing the necessary regulatory framework for all wetlands, so as to preserve their ecological integrity and eventually help in their management.
- Specific for wetlands, environmental ministry has issued regulations for the rules for wetlands (conservation and management) rules 2017 in accordance with the EPA 1986.

Topic 15. RARE DINOSAUR EGGS FOUND IN NARMADA VALLEY SHOW HOW ANCIENT REPTILES SHARED TRAITS WITH TODAY'S BIRDS: STUDY

Important for Subject: Environment

The group of Indian researchers have discovered rare cases of dinosaur fossil eggsegg inside an egg among 256 eggs recently discovered in the Narmada Valley.

The details of the results:

- The findings link the distinctive reproduction ability of Titanosaurs which is one of the most massive dinosaurs ever to have walked on the Earth- to the present-day birds.
- The egg contains two yolks. This characteristic is also observed by birds which is suggests they have similar traits for reproduction.
- The distinctive feature of eggs within an egg is not reported by any other dinosaur, or even from other reptiles.

- The eggs belong to the six different species which suggests a greater variety of the extinct giants from India.
- Fossilized eggs offer clues to reproduction biology, nesting behaviour and the care of parents.
- Similarities to the modern day birds
- Titanosaurs dug their eggs into pits that were shallow, a behaviour that is seen in contemporary Crocodiles.
- They nestled in colonies, which is a characteristic found in around 13 percent of modern-day animals. Also, they laid their eggs in a sequential in the same order as birds do.

Where are the fossil eggs discovered?

- The region is located in between easternmost Lameta exposed at Jabalpur located in the middle of the Narmada Valley (central India) and Balasinor to the west in the middle of Narmada Valley (western central India).
- Lameta exposure is a sedimentary rock formation famous by its fossilized dinosaurs.
- The sedimentary rocks are mainly exposed in the Narmada Valley.
- The fossils here are mostly obscured due to Deccan volcanoes which hinders the removal of these records through erosion.

The significance to Narmada Valley:

- The 50,000-year-old remains of an ancient archaeological site were found at Narmada valley.
- Study of the Narmada Basin is important due to its geographical position that is important for the movement of animals between North South to South as well as East towards West.
- It's not only rich in fossils or archaeological sites, it also has a long-standing history of human activity.

Topic 16. LOST INTERVIEW OF GEORGE LEMAITRE REDISCOVERED

Important for Subject: Geography

A television station located in Belgiumaired the interview of the Catholic priest identified as Georges Lemaitre (1894-1966). The video was later believed to be lost when it was missing from the archive of the broadcaster.

Who was George Lemaitre?

- Lemaitre Lemaitre was the creator of the Big Bang theory of the universe's beginning and also derived one of the fundamental laws that Cosmologists apply to comprehend the motion of galaxies in relation to one the other.
- Big Bang theory (BBT) replaced the Big Bang theory (BBT) replaced the steady-state theory (SST) in SST, Fred Hoyle and others claimed that the universe was static, and that galaxies that were there for a long time had existed.

What is Big Bang Theory?

- Big Bang Theory is about the creation of our Universe.
- It is believed that around 1370 billion (13.7 billion) years ago, all matter and energy throughout the universe was located in a space smaller than the atom. In that moment matter, energy time and space were not even present. And then, with a thud and a thud, the Universe expanded at an astounding rate, as matter, energy space and time were created.
- In the course of time, as the Universe increased in size matter began to condense into gas clouds, planets and stars.
- Certain scientists believe the expansion of this kind is limited and will cease one day.
- Once this time horizon is reached after which it is expected that the Universe is set to shrink until it is a Big Crunch occurs.

What's the reason Steady State Theory is being replaced by the Big Bang Theory?

- Hoyle (Originator of SST) struggled to explain why there was the existence of hydrogen in the beginning of the universe.
- Hydrogen was the catalyst for the first galaxies and stars and must come from somewhere, however theories of the steady state was unable to determine where.

Topic 17. WHAT LED TO UNUSUALLY LOW TEMPERATURE AT BOOTY'S FINGERPOST?

Important for Subject: Geography

The day prior to Pongal began to dawn on Udhagamandalam A local temperature gauge recorded temperatures of -6.3 degrees Celsius in the Fingerpost area.

What was the reason that led to the mercury dropping to such a low level in Fingerpost?

- The subzero temperatures are caused by an equatorial Pacific Ocean.
- A La Nina winter, along with an extremely strong Siberian High conspired to create an unusually cold winter within South India.
- When it comes to La Nina years, the winds tend to originate out of to the nord and push the pressure trough into the peninsular region of India.

La-Nina winter:

- It's the winter of La-Nina, which signifies strong winds are blowing warm, warm water on the sea's far off the South American mainland, roughly off the coast of Ecuador.
- The heat wave that is sweeping across the Pacific has global implications. In India in particular, La Nina can intensify summer monsoons, bringing more rain and lead to colder winters.
- La Nina La Nina is reverse from El Nino, in which the equatorial waters of the South American coast become unusually warmer.
- One consequence is that during winter it is observed that the subtropical western jet across North India is pushed southward which allows for the westward-facing disturbances to produce frigid winters in the north.
- However, during La Nina seasons, there is a "highway" of cold breezes that flow southward out of southwards from Siberian High, "a cold, high-pressure area of air which is occupying this Central Asian zone and affecting winds that are coming to India.

Strong Siberian High:

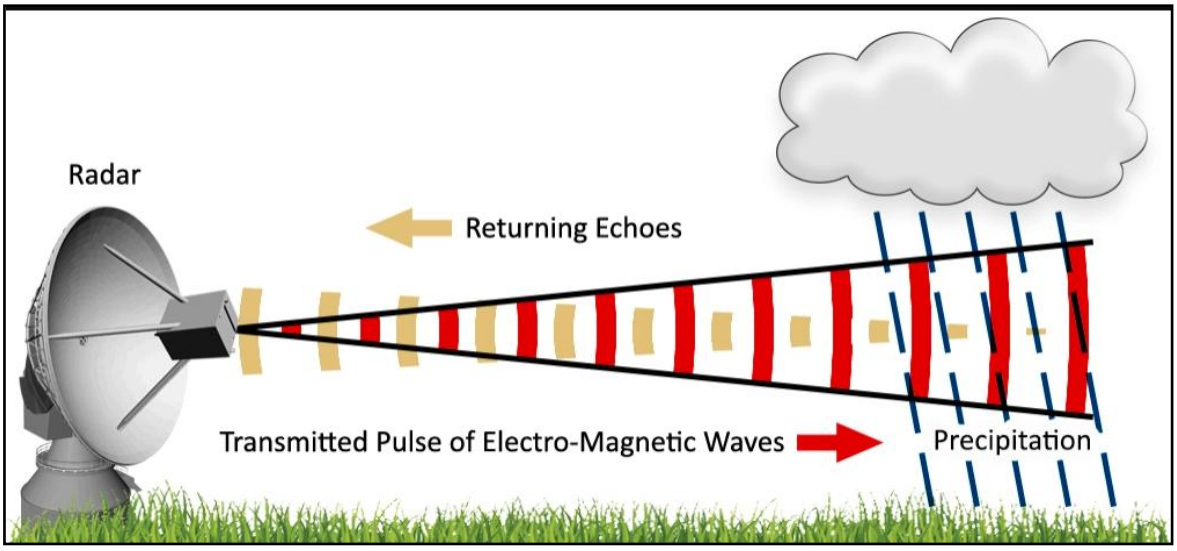
- It is believed that the Siberian High is responsible for the bitter frigid tundra and is known to impact the weather across Italy up to the Philippines. However, this time it's "anomalously strong".
- The temperature dropped further in the interior regions of Tamil Nadu due to the retraction of the northeast monsoons which allowed dry-land winds to get stronger.

Low-pressure trough:

- Contrary to El Nino-driven cold weather that covers India between the northwest and the southeast during La Nina seasons, the winds mostly tend to originate in from to the northwest and lower the pressure trough into the peninsular region of India. They cover a larger area and impact many more people.

Topic 18. DOPPLER WEATHER RADARS

Important for Subject: Geography



What is RADAR?

- RADAR is the extension of Radio, Detection and Ranging.
- Its fundamental components comprise a transmitter antenna, receiver power supply system high-performance computing and signal processing equipment.
- It olls on the principles that electromagnetic signals are being sent to the sender.
- The same wave that hits an object or dense medium is reflection back at the receiver.

- The distance from the object is calculated by its speed as a result of electromagnetic waves as well as the amount of time required to travel from the object and then back.
- There are at minimum 10 types of radars.

Ground Penetrating Radar:

- It examines the crust of the Earth up to 9 metres in depth..
- It is used in the Defence Geo informatics Research Establishment (DGRE) located in Joshimath.
- InSAR (Interferometric Synthetic Aperture Radar)
- It takes the high density measurements across vast areas using radar signals that come from satellites orbiting Earth and tracks the changes in land surface.
- It is also being utilized also in Joshimath as well as other areas of Uttarakhand.

Doppler radar:

- The Doppler radar is a special radar that utilizes the Doppler effect to generate velocity data for objects from the distance.
- When the source and signal are moving relative in relation to one another There is a shift in the frequency that is observed by the person who is watching. This is known as Doppler Effect.
- If they move closer, their frequency will increase and the reverse is true.
- A Doppler Weather Radar (DWR) operates according to principles of the Doppler principle.
- It's designed to enhance accuracy in long-range forecasting and monitoring using the parabolic dish antenna as well as a spherical radome made of foam sandwich.
- DWR has the tools to measure the intensity of rain along with wind shear and velocity and determine the location of a storm's centre as well as the location of a gust or tornado front.

What is the reason DWR is considered to be superior over other radars?

- Differently from other models like it, unlike others, DWR is the only one with the ability to identify the motion of air as well as wind, speed of rains, wind and temperature, storms hail, squalls, storms, lightning, cloud movement and analysis of

cloud reflectivity index in addition to other.

- It is estimated to cost between the equivalent of Rs10-20 crore for each unit.
- The National Ocean and Atmospheric Administration (NOAA) of the US makes use of of 148 of these.
- It is believed that the Indian Army and Air Force have deployed the Indian Doppler Radar (INDRA) to identify aircrafts and other airborne objects.

DWR in India:

- At present, India has 37 DWRs.
- A majority of them are plain areas, but hilly regions and coastal terrains need more.
- The primary benefits of DWRs are that they cover the entire nation and provide the most precise and accurate identification of weather conditions that include dynamic weather phenomena such as such as cyclones, turbulence, thunderstorms or lightning.
- Only they can conduct the analysis of clouds, which aids in the measurement of forecasts of rain and cyclonic intensity, precipitation.
- They also can precisely determine the weather conditions in real-time, whether routine or normal occasions. The forecast for lightening is up to 5 days ahead.

Topic 19. NHPC SUBMITS PRE-FEASIBILITY REPORT ON UPPER SIANG HYDROELECTRIC PROJECT, AS COUNTER TO CHINA'S DAM ON BRAHMAPUTRA

Important for Subject: Geography

National Hydroelectric Power Corporation (NHPC) has submitted an application for pre-feasibility for the Central Electricity Authority of India for the "Upper Siang Multipurpose Storage', India's largest hydropower project that is scheduled to start located in Arunachal Pradesh.

About Upper Siang Multipurpose Storage:

- Locale: Arunachal Pradesh. It is located across Siang river (in Arunchal Pradesh, Brahmaputra river is called as Siang river)
- In order to stop China's diversion plan to it, the Yarlung Tsangpo River in China

which is a river that flows through Arunachal in the form of Siang and later as it flows into the Brahmaputra located in Assam.

Hydel power production.

- The Upper Siang reservoir will store 9 billion cubic meters of water.

Required in order to Upper Siang hydroelectric project:

- China is currently building the world's largest (60GW) dam, 60GW, in Medong (a region close to Arunachal Pradesh) and is working towards carbon-neutrality by 2060. Other projects that are being built by China in the vicinity of Arunachal Pradesh include:
- 360 MW dam at Gyatso
- 560 MW dam at Jiexu.
- Three additional dams that are 640 MW at Dagu 7, 10 dam with MW at Bayu and an 800 megawatt dam in Zhongyu the dams are in advanced stages of design.
- This is a major concern for India since the water diversion could result in a decrease in the river's waters in the peak season. In addition, a potential release of water that could cause massive flooding.
- In the event of a problem it will serve as an aquisition. If there is the diversion of water from China the enormous reservoir would be able to provide water to Arunachal Pradesh and its water needs.

About the Siang/Brahmaputra river

- The Brahmaputra is a river that crosses the border that runs through Tibet and northeast India as well as Bangladesh.
- The river is also called YarlungTsangpo in Tibetan Siang/Dihang River in Arunachali. It is also known as the Luit in Assamese as well as the Jamuna River in Bangla.
- This is 9th biggest worldwide river by discharge and is the 15th longest.
- It has its roots from its origins in the Manasarovar Lake region, close to Mount Kailash, in the northern part of the Himalayas of Burang County in Tibet in Tibet, where it is referred to as the
- Yarlung Tsangpo River It flows through the southern portion of Tibet to cut through

the Himalayas into amazing canyons (including Grand Canyons like the Yarlung Tsangpo Grand Canyon) and then into Arunachal Pradesh.

- It runs southwest across the Assam Valley as the Brahmaputra and flows south across Bangladesh in The Jamuna (not in the same way as Yamuna in India).
- The vast Ganges Delta, it is joined by The Ganges, popularly known as the
- Padma in Bangladesh is transformed into the Meghna and then empties in the Bay of Bengal.
- A rising demand for kewda oils an opportunity for the 200,000 residents of the state of Odisha.

Ganjam Kewda oil:

- Ganjam Kewda (Pandanus fascicularis) oil is extracted by steam distillation from the flowers of the fragrant screw pine plant.
- It's licensed in accordance with the Geographical Indications of Goods (Registration and Protection) Act 1999 by the Government of India.
- The flower is collected from approximately five thousand acres within the district.
- The oil is extracted in the Ganjam, Chatrapur, Chikiti and the Rangeilunda block of the district.
- As an aromatic for food processing, the industries of food, flavored tobacco, and pharmaceutical companies as well as other industries.
- An oil producer needs 3000 flowers in order to make a one liter of kewda oil.

Topic 20. EUROPE'S LARGEST KNOWN DEPOSIT OF RARE EARTH ELEMENTS FOUND IN SWEDEN

Important for Subject: Geography

Swedish State-owned miner LAB, a state-owned mining company, has announced it had found greater than 1 million tonnes of rare earth oxides in the northern region of Sweden.

- It is the biggest known deposits in Europe.
- At present, no rare earths are extracted in Europe and the continent mainly imports them from other areas.
- Around 98 percent of the rare earths utilized for the European Union were sent by

China.

Relevance to this finding:

- A reduced reliance upon China in the search for rare earths.
- Self-sufficiency in electricity generation.
- Aid in the the transition towards green energy Elements such as dysprosium and neodymiumare utilized in wind turbine motors.
- Vital for electric vehicles.

Minerals Security Partnership (MSP):

- In 2022, there will be US along with 10 other countries include Australia, Canada, Finland, France, Germany, Japan and Japan, the Republic of Korea (South Korea), Sweden, the United Kingdom, and the European Commission -- came together in an effort to end
- China's dominance on the world market of rare earth minerals led to the formation of the Minerals Security Partnership (MSP).

Objective:

- The purpose that is the goal of MSP seeks to guarantee that essential minerals are processed, produced and recycled in such a way that allows countries to benefit from the full benefit to economic development of their natural resources.
- Concentrate specifically on supply chains for minerals like Cobalt, Nickel, Lithium as well as those 17 "rare earth" minerals.

How do you define rare earths?

- Rare earth elements, also known as rare earth metals comprise group comprising 17 elements within the periodic table, including the 15 lanthanides along with the scandium and yttrium that are found in the same mineral deposits as the lanthanides and share the same chemical properties.
- The 17 rare earths are cerium (Ce), dysprosium (Dy), erbium (Er), europium (Eu), gadolinium (Gd), holmium (Ho), lanthanum (La), lutetium (Lu), neodymium (Nd), praseodymium (Pr), promethium (Pm), samarium (Sm), scandium (Sc), terbium (Tb), thulium (Tm), ytterbium (Yb), and yttrium (Y).

- Although they are classified as rare, many of them aren't actually "rare".
- A rare earth is called promethium is radioactive.

Utilization of rare earth minerals?

- These components are essential in the technology of consumer electronics as well as computers and networks. clean energy, communications modern transportation, health care environmental mitigation, and national defence and national defence, among others.
- Cerium, the most abundant rare earth element is the key element for NASA's Space Shuttle Programme.

Topic 21. AT1BONDS

Important for Subject: Economy

The Bombay High Court Friday quashed the write-off of Tier-1 (AT1) bonds worth 8,400 crore, issued through Yes Bank Ltd, giving investors a huge relief who made bets on these bonds

What are AT1bonds?

- AT1 bonds are unsecure bonds with perpetual Tenor. Also, these bonds, which are issued by banks, do not have a expiration date. They come with an option to call that is used by banks to purchase the bonds from investors. They are usually utilized by banks to increase their capital base or capital in tier 1.
- At1bonds rank subordinated to other loans and are the only one that is superior to equity common to all other debts.
- The mutual fund (MFs) were one of the largest buyers of permanent debt instruments.
- AT-1 bonds are one of the types of perpetual, unsecured bonds issued by banks to build their capital base in order to meet requirements of Basel III.

There are two avenues via which bonds can be purchased:

- Private placements of initial private placements of AT-1 bonds from banks looking to raise funds.
- Market buys on secondary markets of already traded AT-1 bonds.
- AT-1 bonds are similar to of the other bond issues by banks or businesses however

they offer a slightly higher interest rate in comparison the other types of bonds.

- They are also listed and traded on exchanges. Therefore, if an AT-1 bondholder is in need of cash, he could trade it on an auction on the second market.
- The bonds cannot be returned to the bank which issued the bonds and receive the funds. ie it is not a put option to its owners.
- However, the banks that issued them are able of recalling AT-1 bonds that were issued from their banks (termed call options, which allow the banks to redeem these bonds within five and 10 years).
- The banks that issue AT-1 bonds have the option to cut interest payments in a particular year or reduce the bond's face value.
- AT-1 bonds are controlled by the RBI. If the RBI believes that a bank is in need of an emergency rescue, it may simply request the bank to cancel the bonds it has outstanding, but without consulting the investors.

Topic 22. WILL INDIA FACE A RECESSION IN JUNE?

Important for Subject: Economy

Although it is real that the pace of economic growth is slowing down -as per the First Preliminary estimates for the period 2022 to 23, GDP is likely to increase by around 4 percent the January-March quarter.

- A recession is almost entirely excluded because GDP is predicted to increase by about 7 percent (according to the most recent RBI forecasts).
- Therefore, far from shrinking its economy, the economy of India is likely to expand, albeit at a slow pace, from 2023 to 2024.

Recession

- Recession is a term used to describe a period of decline during the economic cycle, where there is a drop in GDP of the country in certain quarters.
- It starts when the economy has reached a high point of activity, and then is over when the economy reaches its lowest point.
- The most common rule of thumb to avoid recessions is to have two quarters of negative growth in GDP.
- A recession is defined as a period that is characterized by a decline in productivity,

revenue, and trade that typically lasts up to one year.'

Topic 23. HIGH INTEREST COSTS MAY FORCE RBI TO CUT DIVIDEND TO GOVT

Important for Subject: Economy

The Surplus that is available to the Reserve Bank of India for transfer or for the RBI dividends for the Union government is expected to be low during the financial year currently ending March 2023 due to the increased spending from the central bank as a result of the rising the interest rate and the higher cost of managing excess liquid in the banking system.

- The lower dividend may be due to increased rates of interest paid to banks who put their excess liquidity into the repo window. Additionally losses resulting from the fall in rates of bonds around the world will likely impact the earnings that the central bank earns. the rupee's appreciation has increased by more than 10% over the past 12 months.

Investment Revaluation Account Foreign Securities (IRA-FS)

- International Investment Revaluation Account for Foreign Securities (IRA-FS) tracks the unrealized gains and losses when a foreign date is revalued in securities.
- The balance of IRA-FS declined from 8,853.67 crore on 30 March 2021, to (-) the amount of Rs 94,249.54 crore on 30 March 2022 as a result of the increase in yields across maturities of all major markets.
- If the yield rises as the yield rises, the price of the bond fall which can result in a decrease in the holdings.
- But the deficit will then be treated in relation to what is in the Contingency Fund.

Transfer of surplus funds from RBI

- The RBI was founded in 1934 was established in 1934. It operates under its Section 47 (Allocation of Surplus profits) Reserve Bank of India Act of 1934.
- The law requires that the profits earned from the Central Bank through its activities be remitted into the Centre.
- As the one who manages their finances annually the RBI also distributes dividends to the government in order to assist with its finances. This is derived from its profits or

surplus.

- A technical committee formed by the RBI Board headed by Y H Malegam (2013) The committee, which examined the adequacy of reserve reserves and the surplus distribution policies, recommended an increase in the amount of money transferred of funds to government.

RBI's Earnings:

- Earned returns on the foreign currency assets of the bank that could take forms of bond or Treasury bills from other central banks, the highest-rated securities, or deposits at different central banks.
- Interest on its local rupee-denominated bonds of government or securities, as well as lending to banks for extremely brief periods, like overnight.
- Management commission for handling the state's borrowings along with the Central government.

RBI's Expenditure:

- Printing currency notes and on staff, as well as the commission it pays banks for completing transactions on behalf of the federal government across the nation as well as the primary dealers such as banks, to underwrite some of these loans.

Topic 24. FIRST AMENDMENT TO THE INDIAN CONSTITUTION

Important for Subject: Polity

Congress Party once even amended the Constitution to limit freedom of speech, while it was the Narendra Modi government, or the Atal Bihari Vajpayee government did not impose any restrictions on any media company or restricted anyone's rights to freedom of speech and speech in any manner, Defense Minister Rajnath Singh said.

- He claimed that the introduction of the initial amendments in the Constitution was discussed for several days, as it was restricting freedom of expression and speech (Article 19.), a fundamental right guaranteed by the constitution.

Constitution (First Amendment) Act

- First Amendment First Amendment was passed in 1951 by the Provisional

Parliament, which was elected by a limited-followship.

- The Amendment set the precedent for changing this Constitution to override the decision of a judges which prevented the government from executing its supposed obligations under specific guidelines and policies.
- In 1951, the Constitution (First Amendment) Act modified The Fundamental Rights clauses that are part of the Indian Constitution in several ways.
- The First Amendment Act amended articles 15 19 85, 87, 341 342, 372 and 376.
- It offered options to restrict the freedom of expression and speech and supported measures to end zamindari and clarified that equality as a right is not a precondition for passing laws that offer "particular consideration" to society's most vulnerable segments.
- The bill also included the Ninth Schedule to shield the land reforms as well as the other legislation included by it to judiciary review.
- Following that, Articles 31A and 31Bwere introduced.

Implications:

- According to the rules in Article 31, laws placed in the Ninth Schedule can't be contestable in a court on the basis that they violated essential rights that citizens enjoy.
- Article 31(A) conferred massive power in the state with regard to taking over estates and taking over administration of any asset or business in public interest.
- The court sought to exclude these acquisitions from the reach of judicial review in accordance with Articles 14 and 19.
- Ninth Schedule Nineteenth Schedule was widely abused.
- Ninth Schedule comprises over 250 laws which are protected under the Ninth Schedule from scrutiny by the courts.

Topic 25. NATIONAL FILM DEVELOPMENT CORPORATION

Important for Subject: Polity

The Director of the National Film Development Corporation (NFDC), which has been responsible for the International Film Festival of India (IFFI) in Goa was removed from his duties from the Ministry of Information and Broadcasting.

- Recently The Films Division, National Film Archive of India and Directorate of Film Festivals were amalgamated with NFDC as part of the government's plan to unite its film organizations.

About National Film Development Corporation

- National Film Development Corporation (NFDC) is an Public Sector Undertaking (PSU)working under the Ministry of Information and Broad castingwhich was founded in NFDC was incorporated in
- The mission that the agency has is to encourage and facilitate an integrated growth in the Indian Film Industry and to encourage excellence in the cinema.
- After merging, authority to make short films as well as documentaries, as well as organising film festivals, and preserving films was handed over to the NFDC through the Ministry of Information and Broadcasting.

Allocation of funds to the budget

- Budgetary allocation of the amount of 1304.52 crores up to the year 2026was provided by the government to this sector for the work that will be conducted through the NDFC.
- The revenues that are generated by these activities will also paid towards the NFDC.

Topic 26. NATIONAL EXPORT CO-OPERATIVE SOCIETY TO TRADE TO TRADE NANO FERTILIZERS AND DAIRY PRODUCTS

Important for Subject: Polity

Nano fertilizers manufactured by IFFCO as well as dairy products from Amul are among the very first products that will become exportable by the very first National Export Co-operative Society.

National Export Co-operative Society

- The Union Cabinet has approved the establishment and promotion of an national Level Multistate Cooperative Export Society as per the Multi State Cooperative Societies (MSCS) Act, 2002.
- The proposed society is expected to give boost to exports of cooperatives by serving as an umbrella organization to promote and carry out exports.

- This will aid in unlocking the export potential for Indian cooperatives in international markets.
- Additionally it will be an investment capital that is paid up of around the amount of Rs 2,000 crores.
- The Cooperative Society will be distinct in comparison to it's counterpart, the Export Promotion Council under the Ministry of Commerce that serves as facilitator and provides information on potential markets.
- The promoters of this Society comprise leading cooperatives, such as The Indian Farmers Fertiliser Cooperative Limited (IFFCO), Krishak Bharati Cooperative Limited (KRIBHCO), National Agricultural Cooperative Marketing Federation of India (NAFED), Gujrat Cooperative Milk Marketing Federation (GCMMF) (famously called Amul) as well as National Cooperative Development Corporation (NCDC).
- Each of the cooperatives mentioned above are expected to contribute 100 crores per year.
- The Union Cabinet has announced the creation of Multi State Seed Society, Multi State Organic Society and Multi State Export Society.
- Cooperatives are currently in presence in many industries like fishing, agriculture, horticulture livestock as well as handicrafts, fertilizers etc.

The contributions of cooperatives are crucial in these diverse areas. Cooperatives are a significant contributor:

1. 28.80 percent of fertilizer production
2. 35% in fertilizer distribution
3. 30.60 percent of sugar production
4. 17.50 percent of the purchase of surplus marketable milk.

- At present, in the country it has 8.54 lakh cooperatives registered with more than 29 crore members.

Topic 27. 'UAE AND INDIA DISCUSS RUPEE NON-OIL TRADE'

Important for Subject: International Relations

It is reported that the United Arab Emirates and India have held talks to trade non-oil goods using Indian rupees.

- The A.E. has signed a wide-ranging Free Trade Agreement (FTA) with India as well as India together with China is one of the largest trading partners of Gulf Arab oil and gas producers. However, the majority of currency of Gulf countries are based on dollar. U.S. dollar.
- A large portion of Gulf trade is carried out with U.S. dollars but countries such as India as well as China are looking to conduct business with local currencies for a variety of reasons like reducing cost of transactions.

India-UAE Comprehensive Economic Partnership Agreement (CEPA)

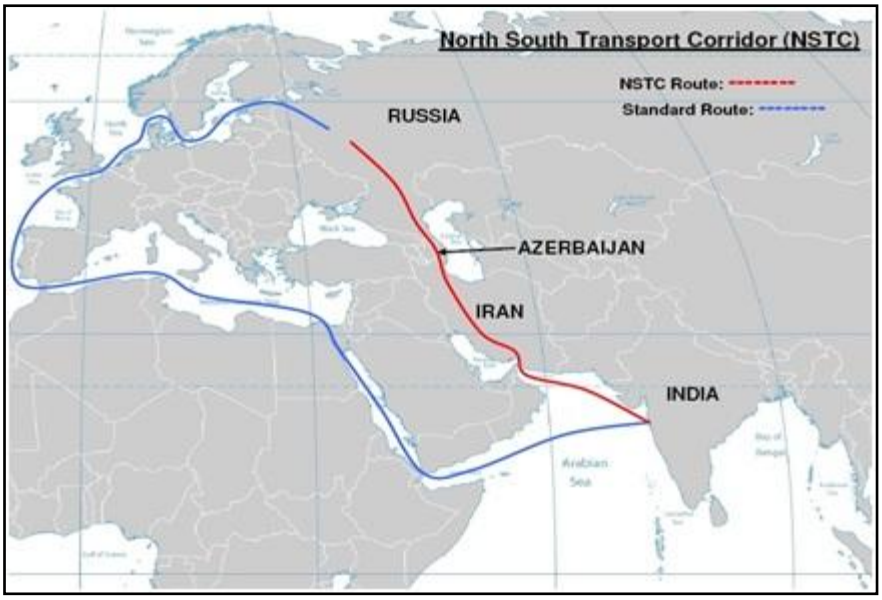
- The UAE's trade agreement with India in an enveloping of World Economic Forum in Davos is aiming to boost bilateral non-oil trade up to $100 billion over the next five years.
- The Comprehensive Economic Partnership between India and the United Arab Emirates (CEPA) was signed on February 18th, 2022 at the time of India and UAE's Virtual Summit.
- The Agreement was in force on May 1st, 2022.
- CEPA establishes the institution of a mechanism to improve and encourage trade between the two countries.
- According to the CEPA which was signed by India as well as the UAE:
- 90 percent of India's exports will enjoy duty-free access to the Emirates.
- It covers services, goods and digital commerce.

What is CEPA?

- It's a type of free trade pact that includes negotiations on trading of services and investments as well as other areas in economic cooperation.
- The government may also look into negotiations in areas like customs cooperation and trade facilitation as well as competition and Intellectual property rights.
- Cooperation agreements or partnership agreements are more extensive in scope than Free Trade Agreements.
- CEPA is also a look at the regulatory aspects of trade and includes an agreement that covers the regulatory aspects.

Topic 28. RUSSIAN NEWSPRINT ON ITS WAY TO CHENNAI VIA IRAN PORT

Important for Subject: International Relations



The multi-modal route of transport will include trains moving across Kazakhstan along with Turkmenistan to arrive at Tehran's Bandar Abbas port from where it will then taking the sea route to get to Chennai.

- The cargo that is handled through RZD Logistics (Russian Railways) has left Russia just a few days ago using the International North-South Transport Corridor (INSTC).
- In the initial phase the cargo was transported via the rail route to Russia through Russia to Bandar Abbas port in Iran through Kazakhstan and Turkmenistan.
- In the Iranian port the cargo is transported via the sea to Chennai on the second part of the journey.

About INSTC

- It is INSTC is a crucial trade corridor initiative, in which India has partnered with 12 other countries to create the economic corridor.
- 7200 km multi-mode transportation (Rail sea Road) project that will transport cargo between India, Iran, Afghanistan, Armenia, Azerbaijan, Russia, Central Asia and Europe.
- The goal is to enhance trade connectivity across major towns like Mumbai, Moscow, Tehran, Baku, Bandar Abbas, Astrakhan, Bandar Anzali and others.
- Dry runs on two routes were run in 2014. The first one was Mumbai through Baku by

Bandar Abbas and the second was Mumbai to Astrakhan via Bandar Abbas, Tehran and Bandar Anzali.

Topic 29. WORLD ECONOMIC FORUM

Important for Subject: International Relations

The 53rd annual conference of WEF will begin in the Swiss town of ski with thousands of attendees which includes around one hundred people from India discussing cooperation in a world that is fragmented'.

- The theme for the Annual Meeting's 53rd edition would be "Cooperation in a Changing world" and it will bring together more than 2700 leaders from 130 nations with 52 heads of government and state.
- The agenda for the 53rd Annual Meeting will focus upon strategies and private collaboration to solve the biggest challenges facing the world today and will place special attention paid to gender and geographic diversity across the sessions.

World Economic Forum

- The World Economic Forum (WEF) is an international bodyheadquartered located in Geneva, Switzerland.
- It brings together the business and political elites each year to discuss the most pressing issues that affect the global economy.
- **Goal:** Committed to improving the global situation through involving business, political academic and other leaders in society to influence regional, global and industry-specific agendas.
- These can include but not be restricted to economic, political environmental, social and political issues.
- **Davos:** The WEF is most well-known for the annually held World Economic Forum Meeting at Davos which is the Swiss ski resort.
- The conference regularly attracts politicians and business leaders from all over the world for an array of discussions around global issues.
- The WEF is not an autonomous decision-making power,but seeks to influence powerful individuals to make choices which benefit the world community.
- The group is financially supportedthrough the contributions of its own

members which includes a number of prominent political and business leaders.

Some of the most significant reports issued by WEF include:

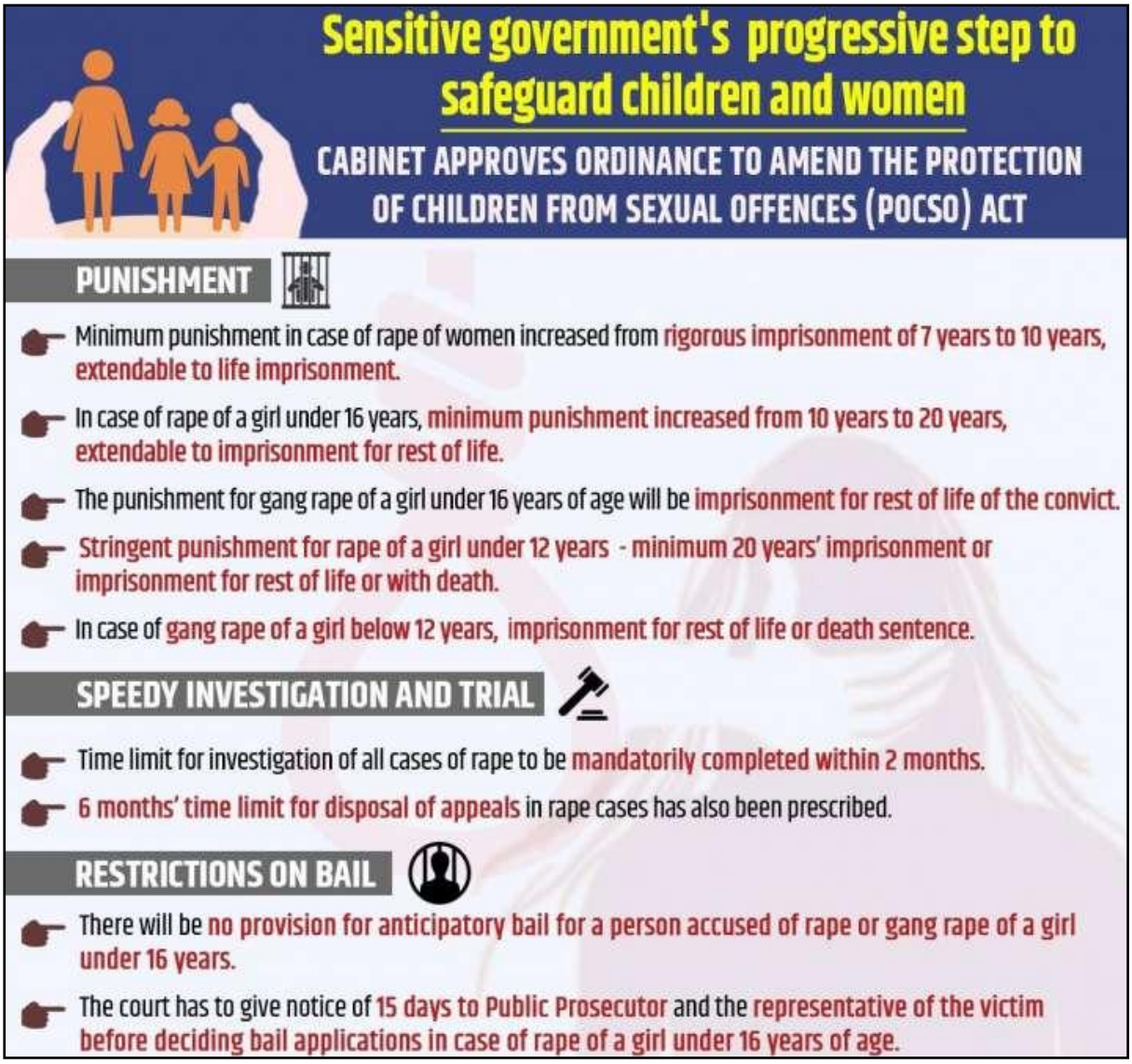
1. Energy Transition Index.
2. Global Competitiveness Report.
3. Global IT Report (WEF, in collaboration with INSEAD along with INSEAD, Cornell University publishes this report).
4. Global Gender Gap Report.
5. Global Risk Report.
6. Global Travel and Tourism Report.

World Economic Forum (WEF) and the Great Reset

- A central theme of recent WEF events and publications is the notion that the world's economic, political and social order has to undergo "Great Reset" in the face of technological advances environmental challenges, the economic damage caused by the COVID-19 pandemic.
- The Great Reset includes a vast variety of reforms linked to social, economic and environmental, geopolitical and technological issues.
- A Reset requires massive distribution of wealth, and elimination of competition as well as creative destruction and economic growth in the favour of common goals that are controlled by the government, as well as social security.

Topic 30. COURT CAN'T REDUCE MINIMUM SENTENCE GIVEN IN POCSO ACT

Important for Subject: Governance



The judges are not empowered to reduce the sentence imposed by the Protection of Children from Sexual Offences (POCSO) Act in the case of convicting a suspect of sexual assault against children as The High Court of Karnataka has declared while enhancing the less severe sentences handed down to an accused by a special court.

- It is a sacrosanct the law of the land and demands no need to be stressed that when the statute specifies the minimum sentence that either the judge who is the trial judge or appellate judge is not able whatsoever to lower the sentence that is prescribed by the statute.

Protection of Children from Sexual Offences Act 2012

- The Union Ministry of Women and Child Development has been the driving force behind the introduction of the Protection of Children from Sexual Offences (POCSO) Act in 2012 following India's ratification UN Convention on the Rights of the Child in the year 1992.
- It was passed to protect children from crimes like sexual violence, sexual harassment and pornography while protecting the interests and well-being of children.
- It defines the term "child" as child as a person younger than 18 years old and takes the best interest and well-being of the kid as being that is paramount at each stage to ensure healthful physical, emotional social and intellectual development of the child.
- It clarifies the various types of sexual violence, including both penetrative and non penetrative assaults and pornography and sexual harassment.
- It can be deemed the act of sexual assault as "aggravated" under certain circumstances like when the child who is abused is mentally ill, or when the perpetrator is someone in a position that is a source of trust or authority, like family members, a teacher, police officer or a physician.
- The police are also put as child protectors during the investigation procedure.
- The Act provides that a child's sexual assault case is to be dealt with within one year of the time the incident is discovered.
- The law was amended in August 2019 to offer stricter punishment, including death penalty for crimes committed by children that involve sexual assault.

Topic 31. DAVOS 2023: NATURAL DISASTERS, EXTREME WEATHER SECOND-MOST SEVERE GLOBAL RISK IN SHORT TERM, SAYS WEF REPORT

Important for Subject: Governance

More about WEF document:

- **Report title:** Global risks report 2023
- Publication by the World Economic Forum (WEF)
- WEF annual meeting that is held every calendar year at Davos, Switzerland.
- The 2023 meeting's title is: Collaboration in a Changing World

Report Findings:

- "Failure to limit the effects of climate changes as well as failure to adapt to climate change' are the two most significant risks that will be affecting the world over the next 10 years which are being followed by natural disasters and extreme weather incidents' and 'Biodiversity loss and collapse of ecosystems'.
- The cost of living is regarded as the highest-risk world threat in the short-term (over over the course of the next 2 years).
- Within the 10 nations, severe weather and natural catastrophes were considered as the most dangerous risk in the short time or over the coming two years.

What is 'Global Risk'?

- "Global risk" is defined as the chance of an event or circumstance that should occur it could adversely affect the major portion of world gross domestic product as well as natural resources or population.
- Natural catastrophes on the Indian subcontinent.
- India registered extreme weather conditions on 291 of 334 consecutive days between January 1 to October 30, 2022, according the the India's Atlas on Weather Disasters prepared by the Centre for Science and Environment and Down To Earth.

Topic 32. AHOM CHARAIDEO MAIDAMS TO VIE FOR UNESCO TAG

Important for Subject: Art and Culture

Assam Chief Minister has recently stated his government's Central Government has decided to submit a proposal to UNESCO proposing Charaideo Maidam of the Ahom Kingdom as a World Heritage Site.

- There is currently no World heritage Site in the category of cultural heritage within the Northeast.

Moidams/Maidams

- Moidams (also known as Maidams) Moidams (also Maidams) are the mound burial system of the Ahom Dynasty (13th century to 19th century).
- The mound-burial method of the royals of the Ahom Dynasty of Assam's haraideo district is comparable with the tombs of royals of old China as well as the Pyramids of

the Egyptians Pharaohs (kings of the ancient Egypt).

- Charaideo located approximately 400 km to the to the east of Guwahati was the first capital city of the Ahom Dynasty established by Chao-Lung Siu-Ka-Pha 1253.
- The previous practice was that the deceased along with their personal belongings (apparatusor equipment) were burials.
- But, in the turn of the century in which time the Ahom rulers followed an Hindu practice of cremation placing the cremated remains and even ashes inside the tomb of Moidam in Charaideo.
- The Moidams are enshrined in their immortal remains Ahom royals and are revered.
- In the transition of Ahom capital east and south Moidams have been observed in various parts in Northern Vietnam, Laos, Thailand, Northern Burma, Southern China and Northeast India and together define the region in which Tai-Ahom culture was dominant.

What is the reason Charaideo is referred to as the "Pyramids of Assam"?

- It is home to the sacred burial grounds for Ahom queens and kingsand are also believed to be the site for the ancestral gods of the Ahoms.
- There are 42 burial tombs (Maidams) from Ahom queens and kings are located in the Charaideo hillocks.
- Architectural:It includes a huge underground vault that has at least one chamberhaving an oblong superstructure. It is covered by an earthen moundand externally, it appears as an hemispherical mound.
- Ahom Dynasty It was established in 1228 by Chaolung Sukapha, who entered the Brahmaputra valley in 1228.
- They rule Assam throughout the course of six millennia until the British adopted Assam.
- The Ahoms established a new state after replacing the government of Bhuiyans (landlords).
- The Ahom administration was a monarchy-based administrationwith democracy and the aristocratic idealsas well.
- The society of Ahom had been split into clansnd as the kingdom expanded the Kingdom, these clansmoved and were in charge of the territory they were given.

- The Ahoms adhered to strict travel guidelines to safeguard their homeland from foreign invaders seeking to make inward travel.
- The 17th century was when Ahom rule was weaker due to numerous Burmese invaders and internal disputes.
- Ahom Kingdom was incorporated by the British East India Company after the Treaty of Yandabo in 1826.

Topic 33. WOMEN OFFICERS IN COMMAND SOON

Important for Subject: Defence

The Indian Army has initiated the process of selection of female officers for posts of command like Colonel rank previously reserved for male officers.

- The openings for the special No. 3 Selection Board were announced by the government to encourage female officers to ensure that gender equality is maintained within the Army.
- 244 female officers are contemplating promotions to the rank of Colonel to Lieutenant Colonel in response to the 108 vacant positions.
- This decision is in accordance with the decision of the Supreme Court which upheld an earlier ruling which granted permanent commissions and command posts to female officers in all branches and services that are not combat.
- In light of this ruling of the Supreme Court, the Army has given Permanent Commission (PC) to female officers at a level with those who are male.
- Fuhrer Five women officers have passed five women officers have passed the Defence Services Staff Course (DSSC) as well as the Defence Services Technical Staff Course (DSTSC) Exam recently for the first time in history.
- The five officers will be undergoing an one-year training course and will receive the proper importance when it comes to leadership roles.

Permanent Commission for Women

- In the Short Service Commission (SSC) scheme women were appointed in the Army for an initial period of 10 years. They could extend it until 14 years.
- Women were however limited to specific streams, such as Army Education Corps, Corps of Signals, Intelligence Corps as well as the Corps of Engineers.

- These streams were specifically excluded from combat arms, such as infantry and armoured corpses.
- Although the male SSC officers could choose to receive permanent commissions at the end of 10 years, this option was not available for female officers.
- Women officers were, therefore, unable to hold any appointment to command, and therefore, were not eligible for the pension system of the government, which begins after 20 years being an officer.
- In the February 2019 policy statement that was released, the Government approved the permanent commission of SSC female officers in 10 streams of the 'Combat support' Arms and Services sections.
- The term "permanent commission" refers to a Permanent Commission means a career in the Army until you retire.
- It was also stated that women officers would not be given any leadership positions and would be able to serve only in posts on staff.