

WEEKLY CURRENT AFFAIRS MAGAZINE for

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

OCTOBER-VOL-IV-2022

23 October to 31 October



-
- UPSC/MPSC/NDA/CDS/CAPF/AFCAT
 - PUNE/THANE/DADAR/ANDHERI/KALYAN/
PCMC/NERUL/BORIVALI
 - Offline/Online batches/Video course
 - www.pioneeracademypace.com/.in
 - IVR No. – 75060 10635
-

INDEX

Topic no	Topic Covered	Page No
ENVIRONMENT		
1.	CENTRE RESTRICTS USE OF COMMON WEEDICIDE GLYPHOSATE	4-5
2.	A NEW TARGET FOUND TO COMBAT AMR SALMONELLA	5-7
3.	KALANAMAK RICE IS NOW SMALL AND STRONG	7-8
4.	PIT STOP IN NORTHEAST: MANIPUR DISTRICT BANS AIRGUNS AS MIGRATORY BIRDS ARRIVE	8-9
5.	NEW SPECIES OF GENUS ALLMANIA SPOTTED	10
6.	ASIAN ELEPHANTS AT RISK AS THEY ROAM OUTSIDE PROTECTED AREAS	11-13
7.	CLIMATE CHANGE AMPLIFYING HEALTH IMPACTS OF MULTIPLE CRISES, SAYS THE LANCET REPORT AHEAD OF COP27	13-15
8.	COUNTRIES' TARGETS TO CUT GREENHOUSE GAS EMISSIONS INSUFFICIENT: UNFCCC	15-17
9.	RECORD GREENHOUSE GAS EMISSIONS: TIME RUNNING OUT, WARNS UN	18-19
SCIENCE & TECHNOLOGY		
10.	DEMAND GROWS BUT DNA TESTS FALL UNDER A GREY AREA	20
11.	HERBICIDE-TOLERANT COTTON SET TO GET RECOMMENDATIONS FOR RELEASE	21-23
12.	PARAM-KAMRUPA	24
13.	DNA DIVERGENCE	25-26
14.	BIOTECH REGULATOR CLEARS FIELD TRIALS OF INDIGENOUSLY DEVELOPED GM MUSTARD	26-27
15.	THE HEAVINESS OF ROCKETS, WHY IT MATTERS IN SPACE FLIGHT	28-29
ECONOMY		
16.	ZERO DEFECT	30-32
17.	BUDGET SPENDING IN FY23 TO EXCEED BE BY RS 2 TRILLION	32-33
18.	MONETARY POLICY OPERATIONS	34-36
19.	INTERNATIONALISATION OF THE RUPEE	37-38
20.	RECESSION	38-40
21.	WORLD ENERGY OUTLOOK 2022	40-42
GEOGRAPHY		
22.	ALERT AS THE WORLD'S LARGEST ACTIVE VOLCANO RUMBLES	42-43
23.	FEWER CYCLONES IN THE BAY OF BENGAL BUT FREQUENCY INCREASED IN ARABIAN SEA: REPORT	43-45

24.	AIR POLLUTION IS NOT JUST ABOUT PM10 AND PM2.5	45-46
25.	OCEANS ARE WARMING TWICE AS FAST THAN THE 1960S AND IT COULD GET MUCH WORSE	46-48
26.	PARTIAL SOLAR ECLIPSE	48-50
POLITY		
27.	SC AGREE TO HEAR PLEA AGAINST FIRST AMENDMENT OF CONSTITUTION	50-51
28.	PRINTING OF THE ELECTORAL BOND	51-52
29.	KERALA GOVERNOR WITHDRAWAL OF PLEASURE IN MINISTER	52-54
GOVERNANCE		
30.	TOBACCO INDUSTRY	54-56
31.	NATIONAL CRISIS MANAGEMENT COMMITTEE (NCMC)	56-57
INTERNATIONAL RELATIONS		
32.	MIGRANT LABOUR	57-59
33.	ARAB SUMMIT	60
GOVERNMENT SCHEMES		
34.	THE DISMAL CASE OF SLASHING SCHEMES AND CUTTING FUNDS	60-61
HISTORY		
35.	SANTHAL REBELLION	62-64
AGRICULTURE		
36.	FLORICULTURE	64-66

Topic 1. CENTRE RESTRICTS USE OF COMMON WEEDICIDE GLYPHOSATE

Important for subject: Environment

IN A NUTSHELL		<ul style="list-style-type: none"> ➤ Monsanto is one of the makers of Glyphosate-based herbicides
		<ul style="list-style-type: none"> ➤ Monsanto had also developed HT cotton but it later withdrew from official trials
		<ul style="list-style-type: none"> ➤ District agri office at Yavatmal says Glyphosate has been recommended only for tea plantations
<ul style="list-style-type: none"> ➤ Glyphosate is used to kill weeds in the fields 	<ul style="list-style-type: none"> ➤ Availability has prompted use of illegal herbicide tolerant (HT) cotton in Vidarbha 	<ul style="list-style-type: none"> ➤ Since there are no tea plantations in Yavatmal, it's not needed here, says the proposal

Union Ministry of Agriculture and Farmers Welfare issued an order restricting the use of glyphosate.

- This widely used herbicide poses a health risk for both humans and animals. Only Pest Control Operators who are licensed to use it are permitted.
- This notification was based upon a 2019 Government of Kerala report on the prohibition of the sale, distribution and use of glyphosate or its derivatives.
- The state governments of Maharashtra and Telangana as well as Punjab, Andhra Pradesh, and Punjab tried similar steps, but failed.

Use in India

- In India, glyphosate is only approved for use in tea plantations and areas not connected to tea crops. It is illegal to use the substance in any other place.
- PAN India's 2020 study on the use of glyphosate in India found some worrying results.
- Glyphosate was used in over 20 crop fields. Pesticide Awareness Network (PAN), India believed that stricter action was needed.

Glyphosate

- It was created in 1970. The International Union of Pure and Applied Chemistry system of nomenclature gives it its scientific name.
- Its molecular formula for its molecular structure is $C_3H_8NO_5P$
- Glyphosate, an active ingredient of weed killers, is an odourless.
- It is used to kill weeds on the leaves of plants.
- In 1974, the United States Environmental Protection Agency registered it for first use.
- This herbicide can be used for agriculture, forestry, lawns, gardens, and to control weeds in industrial areas.

Herbicides

- Herbicide, a chemical agent that kills or inhibits the growth of undesirable plants such as invasive species and residential weeds, is usually chemical

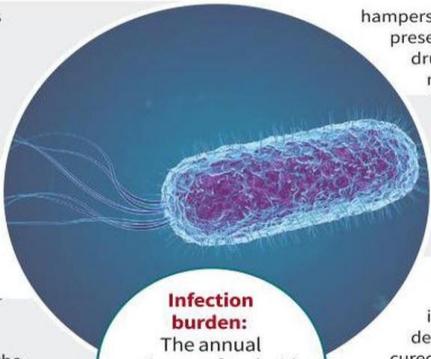
Topic 2 A NEW TARGET FOUND TO COMBAT AMR SALMONELLA

Important for subject: Environment

Neutralising multi-drug resistant Salmonella

The bacteria causes bloodstream infection in malnourished and immunocompromised people

- The bacteria undergoes continuous adaptation to the available antibiotics creating a risk of developing antimicrobial resistance to all drugs
- The outer membrane porins of the bacteria play an essential role in the survival of the bacteria in the presence of antibiotics
- The outer membrane protein A restricts the entry of antibiotics into the bacteria, thus improving the survival of the pathogen
- Deleting the outer membrane protein A (OmpA) from Salmonella



hampers its survival in the presence of two beta-lactam drugs — ceftazidime and meropenem

- Removing OmpA resulted in a greater intake of antibacterial drugs, which ultimately killed the mutant bacteria
- Administration of ceftazidime in mice infected with the OmpA-deleted strain of Salmonella cured the infection
- The strategy of targeting the outer membrane protein A can also be used to develop novel antimicrobials for other pathogens

Infection burden:
The annual estimate of typhoid fever in India is 4.5 million cases and 8,930 deaths.

Rapid and unselective usage of traditional antibiotics can lead to the

- Drug-resistant Phenotype has emerged in Typhoidal and Nontyphoidal
- Salmonella serovars which has increased the difficulty in curing Salmonella-induced food borne diseases (majorly Typhoid or Paratyphoid fevers, gastroenteritis and

diarrhoea).

What's Salmonella?

- Salmonellosis is a group of bacteria which can cause food-borne illness.

What is Salmonella Typhimurium?

- Salmonella Typhimurium ST313, an intruding nontyphoidal Salmonella serovar causes bloodstream infections in the immunocompromised and malnourished population of sub-Saharan African Africa.
- Recent research has shown that Salmonella typhimurium DT104 is now multidrug resistant (MDR), which can cause infection in cattle and humans.
- This bacteria adapts to all available antibiotics, increasing the risk of developing antimicrobial resistant in future.
- Increased resistance against antibiotics
- Salmonella Genomic Island1 provided protection against the MDR genotype in this pathogen.
- This Salmonella Genomic Island1 confers protection against a wide variety of antibiotics including a broad range of ampicillins (pse1) and chloramphenicol/florfenicols (floR), streptomycin/spectinomycins (aadA2), and tG (ACSSuT) (tG) (tetG (tG) (tG (tetG (tG).
- Multi-drug resistant (MDR) refers to a lack of susceptibility to at least one agent within three or greater chemical classes antibiotics.
- Further emergence of extensively drug-resistant (XDR) S. Typhimurium ST313 (having multidrug-resistant (MDR) and resistance against extended-spectrum beta-lactamase and azithromycin) in Africa posed a significant threat to global health.
- Typhoid with Extensive Drug Resistance (XDR) Typhoid is caused when a strain is resistant to at most five of the recommended antibiotic classes for treating typhoid.
- Recent studies have shown that there are as many as 360 cases per year of Typhoid Fever in the United States.
- This is compared to an estimated 4.5 Million cases and 8930 deaths (a 0.2% fatality rate) for the country India.
- OmpA protein plays a critical role

- Recent research has shown that removing OmpA leads to a higher intake of antibacterial medicines, which eventually kills the mutant bacteria.
- The treatment of mice with Salmonella OmpA-deleted caused by the infection of ceftazidime..., cured the disease and demonstrated that OmpA is a key player in antimicrobial resistance.

Typhoid

- Typhoid fever, a serious systemic infection that is caused by the bacteria Salmonella enterica serovar Typhi (commonly called Salmonella Typhi), can only be transmitted by humans. No other animal carriers have been discovered.
- Transmission
- Typhoid fever can be transmitted via the faecal/oral route and by ingestion of contaminated foods or water.
- Typhoid fever is a serious illness that can be contracted by travelers to many countries where it is endemic.

Topic 3. KALANAMAK RICE IS NOW SMALL AND STRONG

Important for subject: Environment

Kalanamak is a tradition paddy that has been grown in 11 Terai districts.

- North eastern Uttar Pradesh is prone to lodging'. This is why it has a low yield.
- Lodging refers to a situation in which the top becomes heavy due to grain formation. The stem becomes weak and the plant falls down.

The Kalanamak Rice has new varieties

- The Indian Agriculture Research Institute (IARI), which was created two dwarf varieties Kalanamak rice varieties, has addressed the problem.
- They were named Pusa Narendra Kalanamak1638 and Pusa Narendra Kalanamak1652.
- This new name was given in recognition of the association with Acharya NarendraDev University of Agriculture & Technology in Ayodhya for the testing of the two varieties.
- Traditional Kalanamak paddy yields only two to 2.5 tonnes per hectare.

- The yield for the new varieties is twice that of the traditional.

GI tag to the traditional

- The traditional Kalanamak Rice is protected by the Geographical Indication tag.
- In the GI app it is recorded that Lord Budhha gave Kalanamak Paddy to Sravasti in order that they would remember him by the fragrance.
- Cross-breeding the kalanamak Rice
- To improve the quality of the breeding program, the dwarfing genes from Rice Variety Bindli Mutant68,, and also the gene Pusa Basmati 1176 were used. The Kalanamak was used as a parent. Progenies were then backcrossed with Kalanamak. This is a new mutation.
- It was given to farmers in this Kharif Season.
- The new breed has a stronger aroma and excellent nutritional qualities.
- Productivity has increased to 4.5-five tonnes per hectare, as opposed to 2.5 tons in the case of traditional Kalanamak.

Topic 4. PIT STOP IN NORTHEAST: MANIPUR DISTRICT BANS AIRGUNS AS MIGRATORY BIRDS ARRIVE

Important for subject: Environment

The Amur falcon arrived, which is the longest-flying migrator bird. The Tamenglong district administration of Manipur has banned all airguns, and ordered that they be placed with the village authorities.

- It is also forbidden to hunt, catch, kill, or sell the bird.

Read more about the news

- This period was critical in the Amur falcon's life cycle. The migratory bird arrives in many Northeast parts, including Tamenglong in October. It is expected to stay there until November 2022.
- Since the arrival of migratory birds in October, a series of awareness and patrolling programmes has been initiated.

About Amur falcon

- Amur falcons are the longest-travelling raptors and they begin to travel with the advent of winter.
- The raptors are south eastern Siberia, northern China, and migrate millions of miles across India, then over the Indian Ocean to south Africa, before returning to Mongolia or Siberia.
- Their name comes from the Amur River, which is the border between Russia & China.
- Their 22,000-kilometre migration route is the longest of all avian species.
- Locally called Akhuipuina the bird is found mainly in Manipur or Nagaland during its southbound migration.
- One-way travel via India takes approximately 20,000 km and birds make this trip twice a year.
- Doyang Lake is located in Nagaland and is more well-known as a stopover site for the Amur falcons during their annual migration to warmer South Africa.
- Nagaland is therefore also known as the "Falcon Capital of the World".

Conservation status

- According to the International Union for Conservation of Nature's (IUCN), the birds are considered the least concerned.
- The protected species is under the Indian Wildlife Protection Act (72), and the Convention on Migratory Species, (CMS), to which India has signed , which means that it is mandatory to safeguard the birds.
- Conservation Banning of airguns by Manipur government.
- The punishment for hunting birds or possessing their meat can be as harsh as three years imprisonment or Rs 5,000 fine.
- 2018 The forest department began a conservation program by radio tagging the birds to study the migratory routes. In collaboration with locals and the department, a five-member team of scientists at the Wildlife Institute of India tagged five Amur Falcons was formed in the following year.

Topic 5. NEW SPECIES OF GENUS ALLMANIA SPOTTED

Important for subject: Environment

An unusually fragile looking plant was spotted on Palakkad's granite hillsocks. It has been identified as a new species in the genus Allmania.

- Allmania multiflora is the name of the species. It is very special both from a conservation and botanical point of view.

Information about the new species of plants

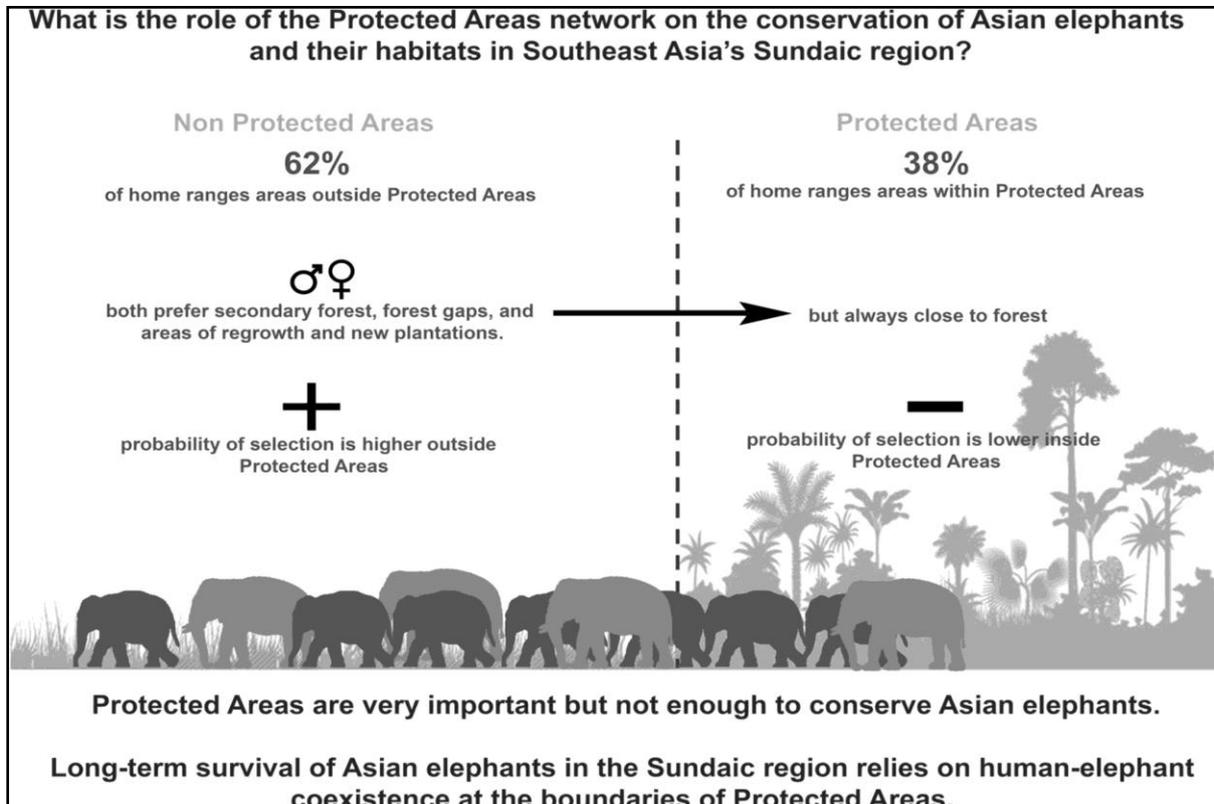
- Allmania multiflora , an annual herb that can grow to a height of 60cm, is the only species of this Genus so far.
- The discovery was made 188 year after botanists had described the genus of the species and its first species.
- The first species, Allmaniano diflora, was originally published under the genus Celosia as Celosia nodiflora in 1753.
- In 1834, Allmaniano diflora was first used to describe the specimens that were found in Ceylon (Sri Lanka).
- Allmania multiflora is an annual herb that can be found at elevations of 1,000 to 1,250m. The base has branches that rise from it.
- The stem is red to violet at its base and green higher up.
- It is distinguished from Allmanianodiflora by its shorter tepals, wider gynoecium (parts that are part of the flower), smaller bracts, and larger seeds. From May through September, flowers and fruiting are possible.

Threats

- There were many threats to the species.
- Its population is quite small.
- Local people could accidentally use it as a vegetable, along with amaranths.
- Its habitat of granite hill socks is also under threat today.

Topic 6. ASIAN ELEPHANTS AT RISK AS THEY ROAM OUTSIDE PROTECTED AREAS

Important for subject: Environment



Asian elephants (*Elephas maxus*) spend most their time outside of protected areas, which puts them on a dangerous collision path with humans.

- Researchers placed tracking collars on 102 Elephants to find that animals often wander out of nature reserves, where the forests have become dense, to eat grasses, bamboo, and palms in clearer areas.
- This discovery has important implications on the long-term survival and well-being of the animals.
- Asian elephants, *Elephas maximus*
- There are three types of Asian elephants: the Sumatran, Indian and Sri Lankan subspecies.
- The Indian subspecies are the most diverse and contain the majority of remaining elephants on the continent.
- The elephant herd's leader is the largest and oldest female member (known also as the

matriarch). This herd also includes the daughters and offspring of the matriarch.

- The longest known gestational period for elephants (pregnancy) is 680 days, which can last up to 22 months.
- Females aged 14 to 45 may have calves about every four years. The mean interbirth intervals increase to five years at age 52, and six years at age 60.
- Global Population: Estimated between 20,000 and 40,000.

Protection Status:

- IUCN Red List: Endangered.
- Wildlife (Protection) Act 1972: Schedule 1.
- CITES Annexe I
- African Elephants
- There are two types of African elephants: the Savanna (or bush elephant) and the Forest elephant.
- Global Population: Around 4, 00, 000.
- In July 2020, Botswana in Africa witnessed hundreds of elephant deaths.

Protection Status:

- IUCN Red List Status:
- African Savanna Elephant: Endangered.
- African Forest Elephants: Critically Endangered
- CITES Appendix I

Threats:

- Poaching escalates.
- Habitat loss.
- Human-elephant conflict.
- Miss treatment in captivity.
- Elephant tourism is a cause of abuse.
- Rampant mining, Corridor destruction.

Human-Animal conflict

- It is a struggle that occurs when wildlife's presence or behaviour poses a direct or perceived threat to human needs or interests. This can often lead to disputes between people or wildlife.

Conflicts:

- Habitat loss.
- The population growth of wild animals
- Changes in cropping patterns can attract wild animals onto farmlands
- Wild animals move from forests to human-dominated landscapes in search of food and fodder.
- Human beings moving to forests to illegally collect forest products
- Habitat destruction due to the spread of invasive species, etc.

A sad situation - Human and animal deaths:

- Between 2018-19 and 2020-21, 222 elephants died from electrocution in the country.
- Additionally, 29 tigers were also killed by poaching between 2019 & 2021, , , while and 197 deaths are being closely examined.
- In three years, 1,579 people were killed by elephants in conflict with their animals. This includes 585 in 2019-20 and 461 in 2020-21.
- Odisha was the most fatal with 332 deaths, followed by Jharkhand (291), and West Bengal (240).
- Tigers killed 125 people in reserves between 2019-2021,
- Nearly half of these deaths were in Maharashtra, with 61.

Topic 7. CLIMATE CHANGE AMPLIFYING HEALTH IMPACTS OF MULTIPLE CRISES, SAYS THE LANCET REPORT AHEAD OF COP27

Important for subject: Environment

A major new report released ahead of the United Nations Climate Change Conference (COP27) has stated that continued dependence on fossil fuels is increasing the health effects of multiple crises facing the world, including the Covid-19 pandemic and the war in Ukraine.

Latest Report-

- Lancet Countdown 2022 Report on "Health and Climate Change: Health at the mercy fossil fuels"
- This report is the result of 99 experts working from 51 institutions.

Report findings

- The seventh annual global report of Lancet on Health and Climate Change reveals that both governments and corporations continue to pursue strategies that threaten the survival and health of all human beings today and future generations.

India

- Climate change has an impact on almost every pillar in food safety:
- Comparatively to the 1981-2010 base line, maize's growth season has fallen by 2%. Winter wheat and rice have both experienced a 1% decrease in their respective seasons.
- Infants aged less than one year experienced 72 million more heat wave-related deaths per year between 2012-2021 and 1985-2005.
- Adults over 65 had 301 million more person-days during the same time period.
- This means that from 2012-2021 each infant experienced an average of 9 more heat wave days per annum, while those over 65 experienced an average of 3.7.
- 2000-2004 to 2017, 2021: Heat-related Deaths increased by 55% India.
- Indians experienced 167.2 billion lost hours of potential labour in 2021 due to heat exposure. Income losses equal to 5.4% of the country's national GDP were also reported.
- Between 1951-1960 and 2012-2021, Aedes Aegypti increased the number of months that are suitable for dengue transmission to 5.6 months per year.

The Lancet Countdown

- After the 2015 Lancet Commission on Health and Climate Change, the Lancet Countdown was created.
- The UK Health Alliance on Climate Change is also a member.
- The Lancet publishes the annual Countdown Report after independent peer review.

- The Lancet Countdown, an international multidisciplinary collaboration, is published annually. It monitors the changing health profile of climate changes and provides an independent assessment of how governments around the world have fulfilled their commitments under the Paris Agreement.
- The Lancet Countdown tracks 43 indicators over five key domains. Climate change impacts, vulnerability, and exposures;
- Adaptation, planning, resilience, and health insurance Mitigation actions and health benefits;Economics and finance
- Public and political engagement
- The Lancet Countdown to Health and Climate Change is a collaboration involving more 99 leading experts, including climate scientists and engineers, economists and political scientists, and doctors from 51 top academic institutions and UN agency across the globe, including the World Health Organisation (WHO), World Meteorological Organisation (WMO), World Bank, European Centre for Disease Control and Prevention and many other leading academic institutions.
- The Wellcome Trust supports The Lancet Countdown's work on climate change and health.

Topic 8. COUNTRIES' TARGETS TO CUT GREENHOUSE GAS EMISSIONS
INSUFFICIENT: UNFCCC

Important for subject: Environment

INDIA'S CLIMATE TARGETS: EXISTING AND NEW			
Target (for 2030)	Existing: First NDC (2015)	New: Updated NDC (2022)	Progress
Emission intensity reduction	33-35 per cent from 2005 levels	45 per cent from 2005 levels	24 per cent reduction achieved in 2016 itself. Estimated to have reached 30 per cent
Share of non-fossil fuels in installed electricity capacity	40 per cent	50 per cent	41.5 per cent achieved by the end of June this year
Carbon sink	Creation of 2.5 to 3 billion tonnes of additional sink through afforestation	Same as earlier	Not clear.

A new UNFCCC report has found that the Nationally Determined Contributions (NDC), pledged by countries to stop climate change, are inadequate.

- Based on the most recent NDCs, cumulative CO₂ emissions for 2020-2030 would likely consume 86 percent of the carbon budget according to the NDC Synthesis Report.

The report

- The UNFCCC's Synthesis Report contains an annual summary of countries' climate commitments and their effect on global greenhouse gas (GHG), emissions.
- These commitments, known as Nationally Determined Contributions, were made by countries that signed up to the Paris Agreement in order to combat climate change.
- The most recent version of this report analyzes 166 NDCs that were sent to the UNFCCC on September 23, 2022. Since the last report, 39 countries submitted updated or new NDCs.
- The report stated that marginal progress was made in the last year.
- The total GHG emissions of countries that have pledged more recently will be 10% lower in 2030 than the previous NDCs.
- The Paris Agreement's "ratcheting mechanism", which requires that countries revise their pledges every five years, is what updated NDCs do.
- Updated or new NDCs After COP 26, only 24 countries submitted updated or new NDCs.
- India submitted its revised NDC in August. It extended two of its earlier NDC goals.
- India is now committed to reducing its emissions intensity by 45 percent by 2030, compared to its 2005 levels.
- A country's goal is to achieve about 50% cumulative power from non-fossil fuel-based resources by 2030.
- India has made one its new NDC targets conditional.
- By 2030, the country will convert 50% of its total power generation to non-fossil resources.
- This pledge is based on the "transfer technology and low-cost international financing."

Carbon budget-

- The carbon budget is a biophysical limit of CO₂ that can be emitted to keep global average temperatures below a certain level.
- A carbon budget is the cumulative amount of CO₂ (CO₂) that can be emitted over a time period to maintain a temperature limit.
- It is the maximum amount of carbon dioxide (CO₂) that can be emitted, while still limiting warming to 1.5°C and 2°C.
- Carbon budgets are based on the assumption that rising global temperatures and increased atmospheric CO₂ levels have a nearly linear relationship.
- long-term low-emission development strategies (LT-LEDS)-
- The UNFCCC has published a second report today. It summarizes 53 long-term emission reduction plans that have been submitted by countries.
- These strategies are called long-term low emission development strategies (LTLEDS).
- These plans usually follow an announcement of a long-term target such as net zero emissions by 2050, 2070.
- Some 87% of plans communicated 2050 as an approximate date and a quantifiable long-term mitigation goal.
- The NDC Synthesis report contains 92% of the NDCs that date back to 2030.
- LT-LEDS have a greater scope than NDCs. They include development goals, required levels of investment, and government spending.
- It is unclear if the alignment between NDCs, LT-LEDS and LT-LEDS has been established. Only 8% of countries stated that their NDCs were aligned with their LT-LEDS.
- While LT-LEDS may be helpful in guiding future low-carbon development, but front-loading emission reductions cannot be understated,

Topic 9. RECORD GREENHOUSE GAS EMISSIONS: TIME RUNNING OUT, WARNS UN

Important for subject: Environment

Type of Greenhouse Gases	Source	Removal Source	Gas Reaction
Carbon dioxide (CO ₂)	<ul style="list-style-type: none"> Burning of fossil fuels Deforestation 	<ul style="list-style-type: none"> Photosynthesis process Ocean 	
Nitrous oxide (N ₂ O)	<ul style="list-style-type: none"> Burning of biomass Combustion of fossil fuels Fertilizers 	<ul style="list-style-type: none"> Removal by soil Photolysis in the stratosphere 	<ul style="list-style-type: none"> Absorption of infrared radiation Indirectly affect the ozone concentration in the stratosphere
Fluorinated gases	<ul style="list-style-type: none"> Emitted through various industrial processes. 	<ul style="list-style-type: none"> Photolysis and reaction with oxygen 	
Methane (CH ₄)	<ul style="list-style-type: none"> Burning of biomass Rice paddies Fermentation by enteric bacteria 	<ul style="list-style-type: none"> Microorganism uptake Reaction associated with hydroxyl groups 	<ul style="list-style-type: none"> Absorption of infrared radiation Indirectly affect ozone concentration and water vapor in the stratosphere Production of CO₂

According to United Nations agency-World Meteorological Organization report findings, the atmospheric levels of all three greenhouse gasses -- carbon dioxide and methane -- reached an all time high in 2021.

- The CO₂ levels rose by more than the average annual rate of growth over the past decade, from 2020 to 2021.
- According to the Greenhouse Gas Bulletin of the WMO, the largest year-on-year increase in methane concentrations since the beginning of systematic measurements nearly 40 years ago was also recorded in 2021.
- These levels increased in 2022 across the globe, according to measurements taken by WMO's Global Atmosphere Monitor network stations.
- Radioactive forcing, the warming effect of our climate by long-lived GHGs, jumped almost 50% from 1990 levels. CO₂ accounted approximately 80 percent.

The reasons for higher emissions

- The main reason for the rise in CO₂ levels is due to emissions from cement production and combustion of fossil fuels.

- The global emissions have increased since the COVID-related lockdowns of 2020.
- Some parts of the world are already witnessing the transformation of land into CO₂ sources.
- Analyses show that biogenic sources such as wetlands and rice paddies are responsible for the greatest increase in methane emissions since 2007.
- Natural inter annual variability could also explain the dramatic rise in popularity.
- 2020, 2021 were marked by La Nina Events, that are associated with higher precipitation in the Tropics.
- The increase in nitrous dioxide levels between 2020 and 2021 was slightly greater than that seen from 2019 to 2020, but it was also higher than the average annual rate of growth over the past ten years.
- Methane is very short-lived, lasting less than 10 years. Therefore, its effect on the climate can be reversed.

Information about the World Meteorological Organisation

- The WMO is an intergovernmental organisation that has 192 member states and Territories.
- India is a member WMO.
- It was created by the International Meteorological Organization, which was established following the 1873Vienna International Meteorological Congress.
- WMO was ratified by the WMO Convention 23 March 1950. It became the specialized agency for meteorology (weather and climate), operational hydraulics and related geophysical sciences.
- WMO headquarters is in Geneva, Switzerland.
- The WMO has released the Greenhouse Gas Bulletin Report.

Topic 10. DEMAND GROWS BUT DNA TESTS FALL UNDER A GREY AREA

Important for subject: Science & technology

The Supreme Court of India ruled that forced DNA tests violate privacy and personal freedom.

- This decision was made in a property dispute where the plaintiff claimed to have been the son of Trilok Gupta (late Sona Devi) and the plaintiff.
- Supreme Court ruled that a person refusing to take a DNA exam would be a violation of their privacy.
- The court also stated that DNA tests shouldn't be ordered if there is no other evidence to prove the relationship. They have serious privacy implications and can have societal consequences.

About DNA Test

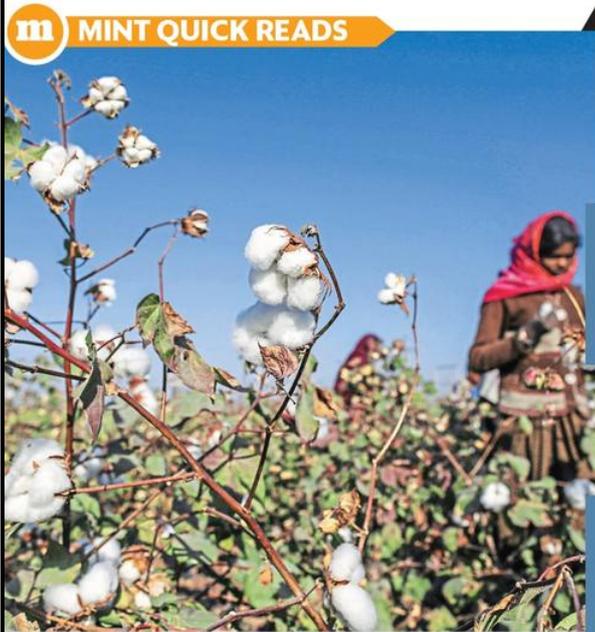
- DNA analysis is very useful and precise. An individual's DNA can be used to determine their identity.
- A DNA sample can be used to establish biological relationships between people.
- Take, for example:
- An examination of hair samples or bloodstains taken from the scene of the crime can help to determine if the DNA is the suspect's.
- In crime investigations, identification of unidentified corps, and in determining parentage are all examples of where DNA technology is increasingly being used.

What is the DNA test?

- Two equally accurate methods can be used to determine the accuracy of your data:
- Blood tests: A medical office collects blood samples from people who need DNA testing. The laboratory will analyze the samples.
- Cheek swabs - One can use cotton swabs to examine the inside of the cheeks for buccal cells.
- Then, one can mail the cotton swab application tools to a designated laboratory.
- If the swabbing is done in a medical setting the office will send the samples to the lab.

Topic 11.HERBICIDE-TOLERANT COTTON SET TO GET RECOMMENDATIONS FOR RELEASE

Important for subject: Science and Technology



m MINT QUICK READS

Quality concerns
Sales of unapproved herbicide tolerant cotton seed packets in **Kharif 2018 pegged at 6 mn packets, up from an estimated 3.5 mn packets last year**

Draft report of FISEC, an expert committee set up by PMO, recommends raiding seed companies and stopping sales of herbicides immediately

Final report of the committee yet to be submitted to PMO, delaying regulatory checks on the sale of illegal seeds

Farmers paying double the price approved for Bt cotton seed to buy illegal herbicide tolerant seeds despite risks involved

After Delhi University's transgenic mustard, India has a biotechnology.

- The "environmental Release" is being recommended by the regulator for a genetically.
- Bayer AG, a German multinational company, has modified cotton (GM) that allows farmers to spray the herbicide glyphosate.

HTBT Cotton

- Bollgard II Roundup ready Flex (BGII RRF), a transgenic cotton, contains three alien genes.
- The first two (cry1Ac) were isolated from a soil bacterium Bacillus thuringiensis.
- They code for proteins that are toxic to the American bollworm spotted Bollworm and the tobacco caterpillar insect pests.
- The third gene, "cp4-epsps", is derived from Agrobacterium tubafaciens, another soil bacterium.
- The crop is "tolerant" of glyphosate because it has it in its fabric.
- Because the chemical doesn't distinguish between crops and weeds, this herbicide

can't be used on normal cotton.

- Sub-committee will look for approval
- The Genetic Engineering Appraisal Committee had established an expert subcommittee within Department of Biotechnology. This was to review the Mahyo Pvt. application. Ltd, Mumbai is the licensee of the BG-II RRF technology.
- GEAC, a body of the Ministry of Environment, Forest and Climate Change, is responsible for assessing GM products in order to allow them to be tested and sold (environmental release).
- BG-II RRF Cotton had undergone field trials and biosafety testing by 2012-13.

What is it like Bt Cotton?

- Bt cotton has been genetically altered (GM) in order to create an insecticide that will combat the bollworm, a widespread pest.
- The HTBt variant of the cotton is an additional layer of modification. This makes the plant resistance to the herbicide, glyphosate.
- Reduces costs: It is difficult to find labour for at least two rounds in weeding Bt cotton.
- HTBt only one round glyphosate spraying without any weeding
- It helps to save Rs. It saves Rs. Farmers pay 8,000 per annum
- Support for Scientists: Scientists also support this crop. Even the World Health Organization says it doesn't cause cancer.

Cotton crop

- Conditions for Growth
- Cotton is the crop in subtropical and tropical areas. It requires uniformly high temperatures, ranging between 21 and 30 degrees Celsius.
- Frost is the enemy number one for the cotton plant. It is only grown in areas with at least 210 days without frost in a given year.
- An average annual rainfall of 50-100 cm can provide water for the modest requirements.
- Punjab, Haryana and account for about 80 percent of total cotton irrigated areas.
- Gujarat and Rajasthan

- Cotton is more susceptible to diseases and pests if it experiences heavy rain or moist weather.
- Good crops require high amounts of rain at the beginning, and sunny and dry weather at ripening.
- Cotton is a Kharif crop that takes 6-8 months to mature.
- It is grown in the peninsular region of India from October to May and harvested between January to May, as there is no risk of winter frost. It is grown in Tamil Nadu as both a kharif crop and a Rabi crop.
- The deep-black soils (regur), of the Deccan, the Malwa Plateaus, and those in Gujarat are closely related to cotton cultivation. It can also grow well in the alluvial soils on the Satluj-Ganga Plain, as well as the red and laterite soils on the peninsular.
- The soil's fertility is quickly depleted by cotton. Regular fertilizer and manure application to soils is essential.

Production-

- Despite being the third-largest cotton producer in the world, India is home to the largest cotton area.
- It is currently grown more than 6 percent of the net sown surface.

Distribution

- India has three distinct agro ecological zones where cotton is grown, viz.
- Northern, (Punjab Haryana and Rajasthan).
- Central (Gujarat, Maharashtra, and Madhya Pradesh).
- Southern Zone (Andhra Pradesh and Tamil Nadu, Karnataka).
- Maharashtra, India's largest producer, produces 26.78% of India's total cotton production. Maharashtra is a long-standing cotton producer. Over 80 percent of the cotton is produced in Khandesh and Vidarbha regions.

Topic 12. PARAM-KAMRUPA

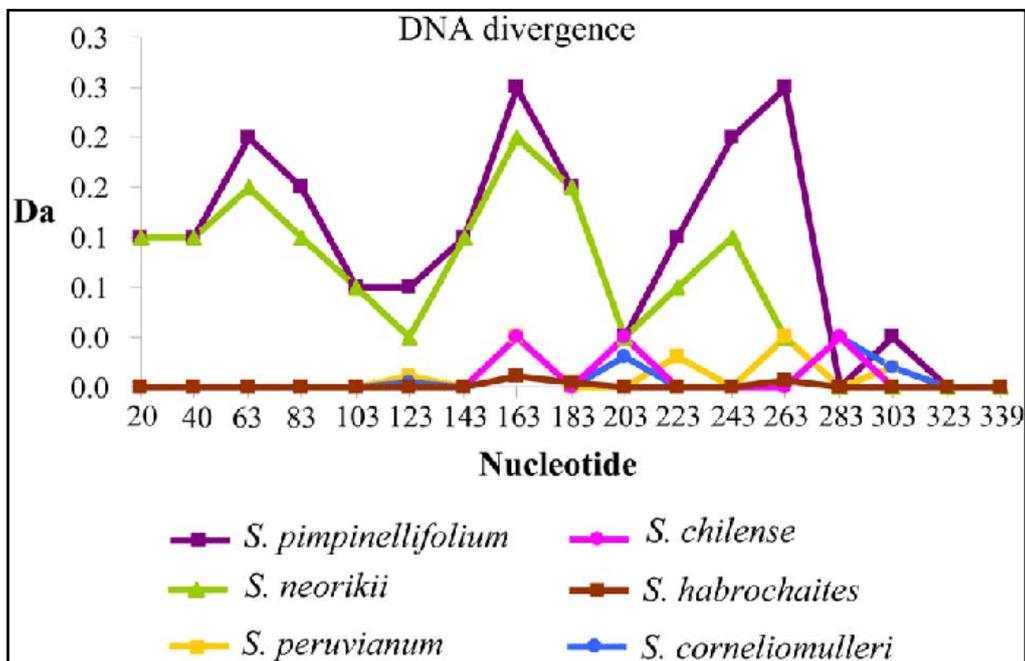
Important for subject: Science and Technology

President Draupadi Murmu launched India's latest supercomputer ParamKamrupa with the help of many government schemes, welfare projects, and other government schemes.

- Param-Kamrupa, an initiative of both the Ministry of electronics and information technology MeitY and the Department of science and technology (DST), was established at IIT Guwahati as part of the National Supercomputing Mission.
- These supercomputers were used in 15 locations across the country.
- Software, design, and all other parts of the supercomputer were developed in India. This makes it an example of indigenous technology 'make in India'.
- IIT Guwahati will benefit greatly from the ability to conduct research in many scientific areas, including weather forecasting, climate prediction, bioinformatics and computational chemistry.
- To meet the computing requirements of different engineering and scientific applications, the supercomputing facility is equipped with modern facilities.
- Param-Kamrupa holds 838 Teraflops. A teraflop, which is a measurement of a computer's speed, can be described as a trillion floating-point operations per second. A typical gaming PC can process approximately 3-4 Teraflops.
- The supercomputer's speed is so fast that approximately 1500 computers can simultaneously process the data.
- It can be used from anywhere, even outside of the institute.
- The supercomputer has a "liquid cooled system" and can easily remove the heat generated.
- Param Kamrupa's supercomputer will provide an extra edge in data science, but also aid in vital technologies such as weather forecasting.

Topic 13. DNA DIVERGENCE

Important for subject: Science & technology



Nobel laureate Svante Paabo has just published one of the most comprehensive genetic studies of Neanderthals yet, giving clues about their social life and structure.

- Svante Paabo and his Nobel prize-winning work on the DNA of early humans, including Neanderthals, were just awarded a few weeks ago. They have published in Nature their largest genetic study yet of this species.
- These Neanderthals were living in Russia's Altai Mountains 50,000 years ago. The 13 bone and tooth samples of the individuals whose remains are being studied, which include 17 bones and teeth, were taken from two caves located about 100km apart.
- It is unlikely that any of these people were contemporaneous. Researchers believe they have discovered a trio of relatives and a pair of cousins. This was done by computing a value known as DNA or Genetic divergence.

DNA Divergence

- The process of genetic/DNA divergence occurs when two or more ancestral species' populations accumulate independent genetic mutations (mutations) over time. This can often lead to reproductive isolation, and continued mutation after these populations become reproductively isolated for a period of time.

- Sometimes, sub-populations living in ecologically different environments may exhibit genetic divergence from other populations, particularly where there is a large population.
- Silent mutations, which have no effect on the phenotype, or significant morphological or physiological changes can cause genetic differences between divergent populations.
- Reproductive isolation will always be accompanied by genetic divergence, whether it is due to selection or genetic drift.
- It is the main mechanism behind speciation (occurs when a species' group separates from its members and develops its unique characteristics).

Reproductive Isolation

- Mechanisms of reproductive isolation include a variety of evolutionary behavior, physiological processes and biological processes that are critical to speciation.
- They stop members of different species producing offspring or ensure that offspring are sterile.
- These barriers preserve the species' integrity by limiting gene flow among related species

Topic 14. BIOTECH REGULATOR CLEARS FIELD TRIALS OF INDIGENOUSLY DEVELOPED GM MUSTARD

Important for subject: Science and Technology

The first commercial release of GM mustard has been approved by the Genetical Engineering Appraisal Committee, which is the body that approves trials and releases genetically modified crops. This was done for the 16th time.

- The Genetic Engineering Appraisal Committee (GEAC) under the Union Environment Ministry has approved seed production "prior to commercial release" of India's first indigenously-developed transgenic hybrid mustard.
- It will open up new possibilities for India's first GM food crop. However, it faces opposition from green groups as well as the so-called swadeshi lobby which is affiliated with the ruling party.
- DMH-11 contains two alien genes isolated from a soil bacterium called *Bacillus amyloliquefaciens*

liquefaciens that enable breeding of high-yielding commercial mustard hybrids.

- Dhara Mustard Hybrid-11 (also known as DMH - 11), is a genetically modified hybrid variety from the mustard species *Brassica juncea*.
- It was created by Professor Deepak Pental, University of Delhi, in an effort to reduce India's need for edible oils imports.
- DMH-11 was created using transgenic technology. This included mainly the Bar, Barnase, and Barstar gene systems.
- The Barnase gene confers male fertility, while the Barstar gene returns DMH – 11 to its ability to produce fertile seed. DMH - 11, thanks to the insertion of the third gene Bar can produce phosphinothricin N- acetyl transferase which is the enzyme responsible for Glufosinate Resistance.
- Due to DMH - 11's potential adverse effects on the environment and consumer health, this hybrid mustard variety has been under intense scrutiny. DMH - 11 has shown higher yields than other mustard varieties and was not found to cause food allergies. DMH - 11 has been delayed for commercial cropping because of conflicting information and results from field trials and safety assessments.
- The GM technology-based crop is supported by proponents who claim it is essential for boosting vegetable oil and domestic oilseed production.
- India produces only 8.5-9 Million tonnes (mt) annually of edible oil. It also imports 14-14.5 Mt, which resulted in a record foreign currency outgo of \$18.99Billion in 2021-22. (April-March).

Mustard:

- Mustard is a self-pollinating crop that is largely. This makes it difficult to develop hybrids, which typically yield more than the normal varieties.
- Deepak Pental (ex-Vice-chancellor at Delhi University) is the CGMCP scientist who has developed a viable and robust hybridization system for mustard. The GM hybrid results from crossing two plants containing 'barnase and 'barstar genes derived from a soil bacterium.

Topic 15. THE HEAVINESS OF ROCKETS, WHY IT MATTERS IN SPACE FLIGHT

Important for subject: Science and technology

With the successful launch on the LVM3M2/One Web India-1 mission, the Indian Space Research Organisation reached an important milestone.

- The LVM3 rocket transported almost 6 tons of payload to lower Earth orbit. This is the largest ISRO space mission.
- India's increased capability
- Few countries are able to launch satellites that weigh more than 2 tonnes.
- Up until recently, ISRO relied on the Ariane Rockets of Europe for heavy satellite launches.
- The LVM3 Rocket, which was GSLV earlier is intended to end this dependence and become the vehicle for India's more ambitious space programmes -- manned missions, Moon landings, and deep space explorations---- in the near future.

India's rockets

- India currently has three operating launch vehicles-
- The Polar Satellite Launch Vehicle (or PSLV), of which there are many versions.
- The Geosynchronous Satellite Launch Vehicle (GSLV MkII);
- The Launch Vehicle Mark-3, LVM3 or GSLV
- Since 1993, the PSLV has been used in 53 missions.
- Only two PSLV flights have been cancelled.
- The GSLV -Mk-II rocket was used in 14 missions. Of these four have ended in failure. last August.
- The LVM3 flies five more times, including the Chandrayaan 2 mission, and has never failed to disappoint.
- ISRO has been working to develop a reusable launch vehicle for the RLV.
- The RLV will not be discarded in space like other rockets.
- It can instead be returned and refurbished for multiple uses .

Heavier rockets

- HTML3 is the result of more than 30 years of effort to develop a rocket capable of carrying heavier payloads or launching into space.
- The payload is 2 to 4% of rocket weight.
- The propellant, or fuel, accounts for between 80 to 90 percent of any space mission's launch-time weight.
- This is due to the immense force of gravity.
- For example, the LMV3 rocket has a liftoff mass of 640 tons and can only carry 8 tonnes to lower earth orbits (LEO), which is approximately 200 km away from Earth's surface.
- It can only carry 4 tonnes to the geostationary transport orbits (GTO), which are further ahead, at 35,000 km from Earth.

Global comparison

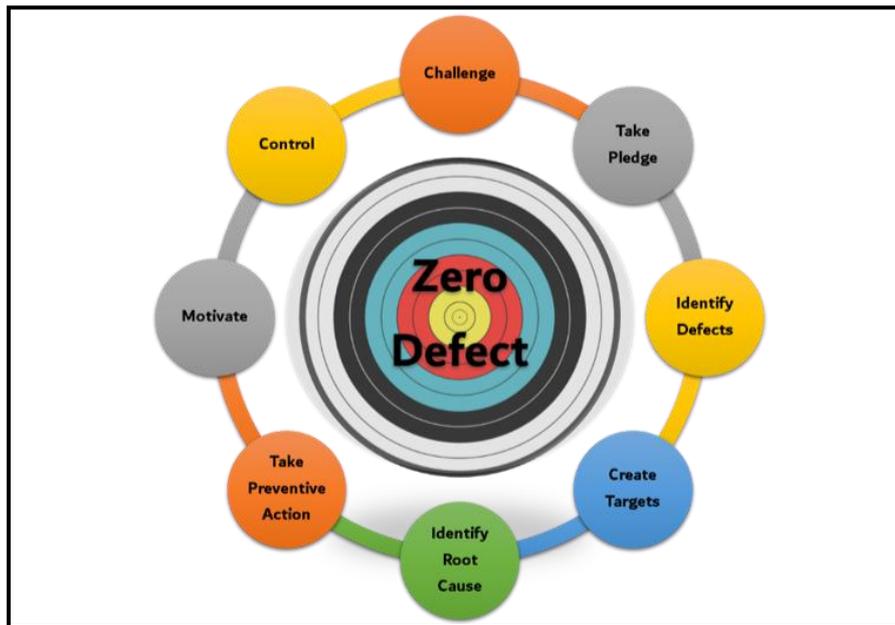
- The HTMLMV3 is comparable to other countries' rockets used for similar jobs.
- ISRO used the Ariane 5 rockets earlier to transport heavy payloads.
- They have a lift off mass of 780 tonnes and can carry payloads up to 20 tonnes to lower earth orbits.
- The Falcon Heavy Rockets from SpaceX are considered to be the most powerful modern launch vehicle. They weigh more 1,400 tons at launch and can carry payloads of only 60 tonnes.

The constraints

- The main constraints to a launch vehicle's design are:
 - . Dimensions of a launch vehicle
 - Fuel efficiency and type of fuel used: solid, liquid, cryogenic or mix
 - Payload size
- Because gravity is stronger here, most of the rocket's energy goes to travelling to the lower Earth orbit.
- A rocket can travel half the distance to the Moon by using half the energy required to reach LEO (a trip of almost 4 lakh km), as opposed to 200 km to get there from Earth

Topic 16. ZERO DEFECT

Important for subject: Economy



Why in the news?

The finance ministry advised banks to support ZED certified MSMEs

- Lenders are advised to offer incentives such as concessional credit and lower loan processing fees.
- Lenders will ensure that the ZED portal is fully integrated with banks' online portals
- About 40% of exports to the country are made by MSMEs, which accounts for 6% of the manufacturing GDP, and nearly 25% of the services GDP.
- ZED (zero defect, zero effect) certification
- It is granted by MSME Ministry to eligible units that meet certain sustainability standards and do not harm the environment.

Objectives:

- ZED Certification promotes Zero Defect Zero Effect (ZED), practices within MSMEs.
- Components:
- Industry Awareness Programs / Workshop: MSMEs are made aware of the MSME Sustainable Certification (ZED).

- Training Programmes on the MSME Sustainable (ZED), Certification to allow partners to implement effectively

Assessment and Certification

- Handholding: Help will be given to MSMEs in order to achieve higher ZED Certification levels.
- Incentives/Benefits: The Ministry of MSME will announce graded incentives for MSMEs to encourage them to attain higher ZED Certification levels.
- PR campaign. Advertising & Brand Promotion
- Digital Platform: The certification process will be e-enabled via a single
- Window digital platform
- MSME Sustainability (ZED) Certificate is possible after you register and take the ZED Pledge
- Certification Level 1: BRONZE
- Certification Level 2: SILVER
- Certification Level 3: GOLD
- MSMEs can apply for any Certification Level, if they feel that they can meet the requirements of each.
- To take a ZED Pledge, you must make a "pre-commitment" (or a solemn)
- MSMEs promise to uphold Zero Defect Zero Effect values in their practices, and to encourage them to continue on the ZED journey.
- Eligibility - All MSMEs registered with UDYAM registration portal (of Mo MSME).

Subsidy:

- The Scheme provides MSMEs with subsidy based on the following structure.
- Micro Enterprises: 80%
- 60% for small businesses
- Medium Enterprises 50%
- Up to Rs. For MSMEs with ZED Certification, a maximum of Rs. 5 lakhs per MSME will be available for consultancy and hand-holding to help them move towards Zero Defect Zero Effect solutions.
- MSMEs may also be eligible for incentives such as ZED Certification by States &

UTs, Financial Institutions, and others. You can also apply for free certification under the MSME KAWACH initiative (COVID-19 Support).

Topic 17. BUDGET SPENDING IN FY23 TO EXCEED BE BY RS 2 TRILLION

Important for subject: Economy

Additional expenditure will be funded by additional tax revenue receipts while the fiscal deficit is kept below 4.5% and at 6.4% respectively for FY26.

- Budget Estimate (BE): Rs 39.5 trillion spending for FY23.
- Additional expenditure: 2.6 trillion for food, fuel subsidies and fertilisers to protect people from rising global commodity prices (expectedly to rise further).
- Reduced expenditure Estimated around Rs 70,000-80,000 Crore from:
- The government has tightened regulations for the release and linking them to the utilisation and return of unspent funds through central sponsored schemes and central-sector schemes.
- As infrastructure creation takes time, grants are available for urban localities that have not yet undertaken the compulsory reforms grants to the health sector.
- Revenue-tax revenues will rise, while non-tax revenues might fall.
- Total expenditure fell by 3% August 2022 as revenue expenditure decreased by 4%, while capital expenditure showed a slight increase of 1%.
- Components of the Budget: There are three major components--expenditure, receipts and deficit indicators.

Expenditure

- Capital expenditure aims to increase assets of a durable nature, or reduce recurring liabilities.
- It includes: (i), the long-term investments made by the government to create assets like roads and hospitals; and (ii), the money that the government gives in the form loans to states and repayments of its borrowings.
- Revenue expenditure refers to any expenditure that doesn't add to assets, or reduce liabilities. Revenue expenditure is typically defined as spending on wages, salaries, subsidy or interest payments.

Receipts

- The Government's receipts consist of three components: revenue receipts, non debt capital receipts, and debt-creating capital receives.
- Revenue receipts are receipts that do not increase in liabilities. They include revenue from tax and other sources.
- Non tax revenue consists mainly in interest receipts from loans to States and Union Territories, dividends, profits, and surplus of Public Sector Enterprises, including Reserve Bank of India surplus, transferred to Government of India.
- External grants and receipts for services offered by the Central Government.
- These services include currency, coinage, mint, general services such the Public Service Commission, police, social services, education, and economic services such as irrigation, transport, and communication.
- Non debt receipts make up part of capital receipts and do not create additional liabilities.
- Because the income from these sources is not expected to increase future payments or liabilities, it would be considered non-debt revenue. Capital receipts that create debt have higher liabilities and future payments commitments by the Government.

Deficits

- Fiscal deficit is, by definition, the difference between total spending and the sum revenue receipts and other non-debt receipts.
- It shows how much the government is spending net.
- Positive fiscal deficits are a sign of excess expenditure above and beyond revenue and non debt receipts. It must be financed with a debt-creating capital reception.
- Primary deficit refers to the difference between interest payments and fiscal deficit.
- Revenue deficit can be derived by subtracting capital expenditures from fiscal deficits.

Topic 18. MONETARY POLICY OPERATIONS

Important for subject: Economy

Open market operations:
Central bank purchases and sales of securities in the open market as a way to implement monetary policy.



What is this monetary policy tool used for?



This tool helps the Fed promote stable prices and maximum employment by changing the supply of reserves in the banking system, which influences interest rates and the supply of credit.

EXAMPLES

Expansionary monetary policy:
Like tapping the accelerator

The FOMC wants interest rates to decrease:

- The Trading Desk is directed to engage in open market operations, including purchases of government securities.
- This injects reserves into the banking system.
- This puts downward pressure on the federal funds rate and, thus, other interest rates, encouraging borrowing.



Contractionary monetary policy:
Like tapping the brakes

The FOMC wants interest rates to increase:

- The Trading Desk is directed to engage in open market operations, including the sale of government securities.
- Banks have fewer reserves available to lend.
- This puts upward pressure on the federal funds rate and other interest rates, encouraging saving.



Both the technical and operational settings of monetary policy operations could change.

Trends in Monetary Policy:

- Traditional/normal times-
- Open Market Operations are designed to achieve the stated goals of managing liquidity and in indirect impact on the yield curve.
- However, certain frictions in other markets can be managed by operations like LTROs Pandemic -forward guidance on an accommodating stance due to lower growth prospects
- Direct quantitative easing - Government Securities Acquisition Programme (GSAP1) in April 2021.
- The RBI began to curtail inflation as a result of economic recovery.
- Post Pandemic Cost Push Inflation
- Forward guidance - Withdrawal of accommodation, aligning inflation closer to the target.

- Monetary policy issues as the global economy enters an era of higher inflation and potentially lower trend line development.
- Management surplus liquidity-Liquidity operations are necessary to ensure that the operating target aligns with MPC's policy rates.
- Monetary and fiscal conflict-Market stabilisation (MSS) is essential for dealing with excess liquidity that is in conflict with the lower borrowing rate- The operating policy stance, as determined by repo rate.
- Market stabilization scheme (MSS) is a monetary intervention by RBI to remove excess liquidity (or money supply), by selling government securities.
- In April 2004, the MSS was created to remove huge amounts of liquidity from the economy due to RBI purchasing large amounts of foreign currency.

Open market operations. Details:

- They are one of three major monetary tools (along with policy rates and reserve ratio) that can influence the money supply and create the desired interest rate trend.
- The policy rates for monetary tools, such as the repo rate, reverse rate, marginal standing facility rate, and bank rate, are called policy rates. CRR and SLR, however, are reserve ratios.
- OMOs refer to the purchase and sale by the RBI of G-Secs on behalf of the Centre in order to reduce money supply and increase interest rates.
- Government securities is a type of debt instrument that the RBI issues on behalf the government to borrow money. These can be treasury notes, which are short-term or money market debt instruments, or dated securities that are longer term instruments. Government securities are promissory notes that guarantee payment at a zero-coupon interest rate. They can also be issued at a discount rate.
- RBI conducts OMOs through commercial banks. Eligible participants must submit their bids to RBI's core banking electronic platform E-Kuber.

What are the main goals of OMOs

- OMOs are designed to limit the flow of money and existing liquidity in the economy.
- If there is an inflationary scenario, RBI adopts contractionary monetary policies. This means that it sells government securities to absorb the excess money.

- RBI wants to increase money supply and provide adequate credit for production and investment, despite the current trend towards recession. It also buys securities to increase the money supply.

What's the purpose of the bond market?

- As money supply and treasury bills change in different directions, bond prices and interest rates are negatively related.
- An OMO is a way to purchase bonds at a higher price and lower rates.
- Open market purchases increase the money supply. This makes money less valuable and reduces rates in the money markets.
- Short-term rates fall when the RBI suggests a surplus liquidity stance. Prices in the money markets rise when short-term rate are lower. However, if the RBI signals tightening liquidity in the system, prices in money market instruments drop and short-term interest rates soar.

G-Sec Acquisition Program (G-SAP).

- It is an unconditional, structured Open Market Operation.
- The "unconditional" here refers to the fact that RBI has made a commitment upfront that it would buy G-Secs regardless of market sentiment.

Objective:

- To ensure a stable, orderly and predictable evolution of the yield curve as well as the management of liquidity in our economy.
- The RBI purchases G-secs to infuse money supply into the economy, which in turn keeps the yield low and lowers the Government's borrowing costs.

Topic 19. INTERNATIONALISATION OF THE RUPEE

Important for subject: Economy

INTERNATIONALIZING ₹

<p>Pros:</p> <ul style="list-style-type: none"> ● Will ease foreign trade, aid capital flows ● Mitigate exchange rate risks ● Reduce dependence on FX reserves 	<p>Cons:</p> <ul style="list-style-type: none"> ● Complicates monetary policy ● Exchange rate stability is challenging ● Could bring uncontrolled capital flows
--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

RBI Deputy Governor T Rabi Sankar drew a distinction between the status of 'rupee as an international currency' and the process of 'internationalisation' of the rupee.

Background

- Internationalization of the rupee: Steps taken
- External commercial borrowings in rupees - Example Masala Bonds
- Invoicing imports and exports in rupee
- Rupee Settlement of External Trade-Rupee Payment Method through Vastro Account
- Allowing domestic banks to trade on the offshore markets
- To improve liquidity in the forex markets, primary dealers (PDs) were allowed to trade.

Risks:

- External vulnerability- If a significant portion of its trade involves rupee, then non-residents would have rupee balances in India that could be used to purchase Indian assets that are largely affected externally.
- Reduction of forex reserves - and the need to have reserves would also be reduced to the extent that the trade deficit is paid in rupees.
- Complex monetary transmission - because rupee supply and demand can be affected externally by policies and conditions. Non-residents could convert their rupee

holdings to Indian currency and leave India during a global risk-off period.

Rupee is an international currency.

- Internationalization of the rupee refers to the increasing use of rupees in cross-border transactions.
- This involves promoting the rupee for export and import trade, then other current account transactions, and finally its use in capital account transaction transactions.
- These transactions are between Indian residents and non-residents.
- The use of rupee for transactions between non-residents would increase confidence in "rupee as an international currency"-- a final stage of "rupee internationalisation".
- Internationalization of Rupee is a way to facilitate greater integration of India's economy with the rest the world in terms foreign trade and capital flows.
- The main benefits of internationalization Rupee include savings on foreign currency transactions for Indian residents, decreased foreign exchange exposure for Indian corporations, and a reduction in dependence upon foreign exchange reserves to balance out payment stability.
- Internationalization is driven by the country's share of global merchandise and commercial service trade.

Topic 20. RECESSION

Important for subject: Economy

What Is a Recession?



Unemployment rate rises
16,000 jobs lost in January 2008



Consumer purchases fall off



Businesses go bankrupt
In 2008, business' orders declined .06 percent compared to the prior year



People lose their homes
Housing prices fell 10 percent in 2008



Young people can't get a good job after school

Jamie Dimon, CEO of JP Morgan Chase, and David Solomon, his counterpart at Goldman Sachs, said that a recession in Europe and the US is becoming more likely.

- A period of economic downturn when the country's GDP falls for some quarters is called a recession.
- It starts when the economy is at its peak activity and ends when it reaches its lowest point.
- Two quarters of negative growth in GDP is a common rule for recessions.
- A recession is when there is a decline in total output, income and trade. It usually lasts six months to one year.
- 32. Nalanda University to Offer Course on Bay of Bengal
- Important for subject International Relations
- Nalanda University will offer " Bay of Bengal: A Introduction" starting in September online.

Course Information:

- The course is a three week course that will feature lectures by experts on navigation, fisheries and track-II policies . It also includes lectures from experts in navigation, fishing, track-II and culture of the countries involved with Bay of Bengal e India.
- This course covers the study of trade and commerce in Bay of Bengal, traditional security and non-traditional security as well as major sea lanes and energy. It also examines migration and refugees, geopolitical competition, geopolitical conflict, geopolitical violence, piracy and pollution.
- PM NarendraModi announced the course during the Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation Summit's Opening Session.
- The Bay of Bengal: An Introduction'course's first batch has 19 participants who are from India and Indonesia, Colombia, China.

What's BIMSTEC?

- The Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation is a regional multilateral organisation of seven South Asian and Southeast Asian countries Bangladesh (Bangladesh), India, Nepal, Sri Lanka and Myanmar.
- It was established in Dhaka, Bangladesh, following the Bangkok Declaration

BIMSTEC Secretariat.

Topic 21. WORLD ENERGY OUTLOOK 2022

Important for subject: Economy

According to the World Energy Outlook report 2022 of the International Energy Agency (IEA), India's energy demand is expected to rise to its highest level globally during the current decade, thanks to rapid urbanization and industrialization.

- In the Stated Policies Scenario, (STEPS), India's energy consumption would rise by more than 3% per year between 2021 and 2030.

Energy role:

- The STEPS sees a 25 percent increase in coal demand, rising to 770 million tonnes (Mtce), by 2030
- Both in the STEPS and Announced Pledges Scenario, coal generation is expected to increase in absolute terms while its share of electricity generation decreases.
- India was the second- biggest coal producer in 2021 (in terms of energy terms). This overtook Australia and Indonesia. Oil demand is meeting a further quarter the growth in energy demand and rising to almost 7 million barrels per hour by 2030.
- The 30% growth in demand for renewable energy is mainly due to a rapid rise in solar PV installation.

IEA reports:

- The International Energy Agency's medium- to long-term outlooks , the World Energy Outlook and the Energy Technology Perspective - employ a scenario approach to analyze future energy trends based on the Global Energy and Climate Model (GEC).
- The GEC Model is used to examine different scenarios about how the energy system might react to the current global crisis and evolve in the future.
- Different scenarios are presented to allow readers to compare the various versions of the future, as well as the actions and levers that lead to them. This is done to stimulate insights into the future of global oil and gas.
- The WEO-2022 and ETP-2023 - both based on the integrated GEC modeling cycle -

allow you to explore three scenarios.

- The Net Zero Emissions Scenario for 2050 (NZE) is normative.
- It shows the key sectors and when they are needed to reach net zero energy and industrial process CO2 emissions. This will allow the world achieve other sustainable development goals, such as universal access to energy.
- The Announced pledges Scenario, (APS), and Stated Policies Scenario, (STEPS), are exploratory. They establish a set of starting conditions (policies and targets) and then let you see where they take you.
- The Announced pledges scenario assumes that all climate commitments made worldwide, including Nationally Determined Contributions and longer-term net zero targets as well as targets to access electricity and clean cooking will be fulfilled in full and on schedule.
- The Stated Policy Scenario (STEPS). represents current policy settings. It is based on a country-by-country and sector-by-sector assessment of the policies in place as well as those announced by governments around world.

International Energy Agency

- The International Energy Agency, an independent Intergovernmental Organisation, was established in Paris in 1974.
- MISSION - To provide reliable, affordable and clean electricity for its member nations and the world. Its mission is guided by four major areas of focus: energy safety, economic development and engagement worldwide
- India was made an Associate member in March 2017 but it had been engaged with IEA since before that.
- Each year, the IEA releases the World Energy Outlook Report.
- The IEA Clean Coal Centre is dedicated to providing independent analysis and information on how coal can be made a cleaner energy source, in accordance with the UN Sustainable Development Goals.
- was established in 1973-1974 after the 1973-1974 oil crises. Its purpose is to assist its members with major oil supply disruptions. This role continues today.
- Over time, the mandate of IEA has grown to include global key energy trends tracking and analysis, sound energy policy promotion, and fostering international

energy technology cooperation.

- It currently has 30 members. Eight countries are also part of the IEA family.
- Candidate countries must be OECD members. However, OECD members do not have to be IEA members.
- A candidate country can only become a member by proving that it:
- Crude oil or product reserves equal to 90 days of net imports for the preceding year, which the government can access immediately (even though it doesn't own them directly), and could be used in order to mitigate disruptions in global oil supply.
- To reduce oil consumption in the country by as much as 10%, a demand-restraint program is implemented.
- Organisation and legislation to implement the Co-ordinated Emergency Response Measures on a national level.
- It has enacted legislation and other measures to ensure that oil companies falling under its jurisdiction provide information on request.
- There are measures in place to ensure that each member can contribute its part to an IEA collective action.

Reports:

- Global Energy & CO2 Status Report.
- World Energy Outlook.
- World Energy Statistics.
- World Energy Balances
- Energy Technology Perspectives.

Topic 22. ALERT AS THE WORLD'S LARGEST ACTIVE VOLCANO RUMBLES

Important for subject: Geography

Hawaii officials are warning residents on the Big Island that Mauna Loa , the largest active volcano in the world, may erupt.

- About Mauna Loa Volcano Mauna Loa, (Meaning: Long Mountain), is one of five volcanic cones that make up the Island of Hawaii in Hawaii. Hawaii is located in the Pacific Ocean.
- Mauna Loa is the sub aerial's largest volcano in terms of volume and mass. It has been

historically considered to be the second largest volcano on Earth.

- It is an active shield volcano, with moderate slopes. The volume of the volcanic fluid is estimated at 18,000 cubic mile (75,000 km³). However, its peak is approximately 125 feet (38m) lower than its neighbour, Mauna Kea.
- The volcano makes up 51% the Hawaii Island Landmass, so an extensive area of the island could be affected by an eruption.
- Mauna Loa rising 13 679 feet above the sea level. is a larger neighbour to the Kilauea volcanic, that erupted in a residential neighbourhood and destroyed 700 homes in 2018. Its slopes are steeper than Kilauea's so its lava flows much faster.
- Mauna Loa's lava eruptions are silica-poor, very fluid, and non-explosive.
- Mauna Loa is believed to have been erupting since at least 700,000. Years and may have reached sea level around 400,000 years ago.
- The most recent eruption of Mauna Loa occurred between March 24 and April 15, 1984.
- Recent eruptions have not caused any deaths, but eruptions occurred in 1926, 1950, and destroyed villages. The city, Hilo, was built partly on lava flows that were left over from the late 19th-century.
- The Hawaiian Volcano Observatory is part of the US Geological Survey. It stated that Mauna Loa was in a state of "heightened Unrest" since mid-January when the number summit earthquakes rose from 10 to 20 per daily to 40 to 50 each day.
- Location of volcanoes in Hawaii Island-

Topic 23. FEWER CYCLONES IN THE BAY OF BENGAL BUT FREQUENCY INCREASED IN ARABIAN SEA: REPORT

Important for subject: Geography

Northern Indian Ocean Cyclones might have been a popular cause of flooding.

- Although there has been a lot of destruction, new research shows that there is a significant drop in the Bay of Bengal.
- However, the Arabian Sea has seen an rise in its water level in the past two decades, according to researchers from the Indian Institute of Science Education and Research in Bhopal.
- They linked this trend to global heating.

- IMD Data on the pattern of cyclones
- India Meteorological Data's (IMD), 130-year-long data collection, found that there were an average of 50.5 tropical storms per decade in the region that includes the Bay of Bengal in East and the Arabian Sea West.
- Researchers found that 49% of tropical cyclones were in the post-monsoon time period. 28% occurred in the premonsoon season from April to June in the same 130 year period.
- An increase in cyclones above the Arabian Sea
- However, the Arabian Sea side, north Indian Ocean, saw a 52% increase in cyclonic thunderstorms (63-88 km/hour) between 2001 and 2019.
- The post-monsoon period saw an increase in frequency of very severe cyclonic thunderstorms, extremely severe storms and supercyclonic hurricanes in the Arabian Sea.
- 2019 was the exception. It saw five tropical storms in the Arabian Sea, and three in the Bay of Bengal.
- Contrarily, the frequency of Bay of Bengal Cyclon Storms has somewhat decreased, but not to any significant degree.
- The Bay of Bengal tropical storms were examined by researchers from 1982 to 2020. They found that El Nino Southern Oscillation years reported more tropical cyclonic activity.

Role vertical shear plays in cyclone development-

- The global greenhouse gases are increasing and the earth heating is causing temperature to rise and winds to change, resulting in less simultaneously.
- One factor in the atmosphere that hinders the growth cyclones' growth is vertical shear.
- This refers to how strong winds can change from the surface of the atmosphere to the top, up to 10 km.
- It decides whether the cyclone, which is trying grow like a tunnel-like structure, gets cut off or not.
- If it does, its energy is taken away and it won't grow into an effective cyclone.
- Also, strong vertical shears reduce cyclones while weak vertical shears increase them.

- The global trend shows a decrease of cyclones but there has been an increase over some parts of the globe, such as the Northern Indian Ocean (Arabian Sea).

Topic 24. AIR POLLUTION IS NOT JUST ABOUT PM10 AND PM2.5

Important for subject: Geography

The discussion on Air Pollution in India focuses on the average concentration of particulate matter HTML10 (particles less than 10 microns), PM2.5 (particles less than 2.5 microns and about 25 to 100x thinner than a human hair), whereas a potential pollutant Nanoparticles' was completely ignored.

- Nanoparticles are air pollutants
- The Central Pollution Control Board can monitor PM2.5/PM10 pollutant in Delhi and other places.
- Nanoparticles are more dangerous than PM10/PM2.5 when it comes to air pollution.

What are nanoparticles?

- Size –
- Nanoparticles (NPs), are very small particles that measure between 1 and 100nm.
- Because of their fine size, can be suspended in air for long periods of time and travel greater distances.
- Mass –
- Although they have very little mass, they are numerous in number.
- The current ambient air quality regulations for particulate material based on mass are not effective in dealing with the nanoparticle concentrations found in cities.

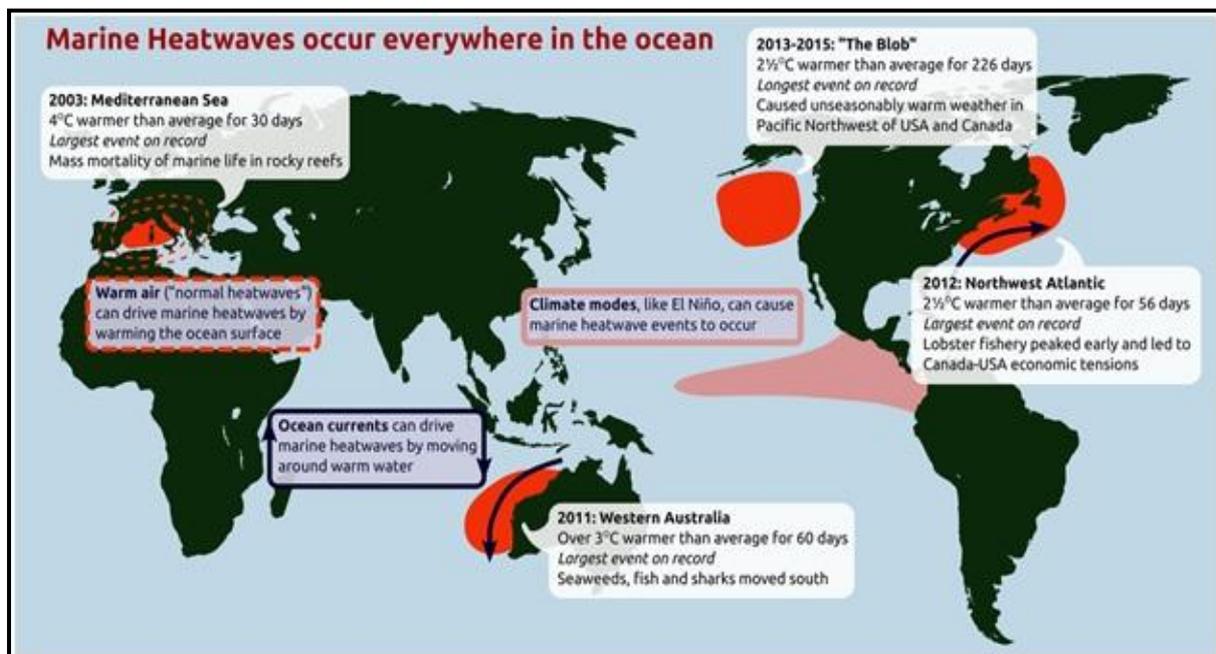
Source

- These are both man-made and natural processes.
- The Impact of Nanoparticles upon Human Health
- People are most likely to be exposed to nanoparticles through inhalation. Transmission mechanisms include ingestions and skin contact with engineered nanoparticles.
- Inhaled particles can get into the blood circulation, where they can be transported to other organs like the liver, kidneys and heart.

- Evidence suggests that nanoparticles can clot blood vessels and increase the risk of heart attack or stroke.
- These toxic elements can be a risk factor for lung cancer.
- High particle concentrations can cause severe problems for patients who have pre-existing cardiac or pulmonary conditions.
- With ever-increasing amounts of matter smaller than 10 um, infant mortality, neonatal complications and birth defects are all likely to rise.
- Interestingly, the pollution mask protects against PM10/PM2.5 particulate matter however, does not protect against pollution from nanoparticles.
- While studies have been extensive in researching the health effects of PM2.5 and/or PM10 exposures, evidence for the harmful effects of nanoparticles upon human health is lacking.
- Because nanoparticles are chemically reactive, it is difficult to assess the risk.

TOPIC 25. OCEANS ARE WARMING TWICE AS FAST THAN THE 1960S AND IT COULD GET MUCH WORSE

Important for subject: Geography



A recent study found that oceans have been warming at twice the rate of the 1960s to 2010. Between 1958 and 2019, the top 2,000 meters of the ocean gained 351 zettajoules. For

context, a zettajoule is 10 to the power of 21 or 1,000,000,000,000,000,000 joules.

- The Earth warms when humans release greenhouse gases into it. More than 90% of heat goes to the ocean.
- To understand the speed at which the Earth's climate changes, we need to look at the ocean to track the ocean heat content change.
- It stated that the rate of warming increased from 5, to 10 ZJ per annum between the 1960s and the 2010s.
- The Atlantic Ocean has the fastest warming, with an average area of 1.42 joule per sq metre. Next is the Southern Ocean, which has 1.40 joule per sq m for the upper 2000 m between 1958 and 2019.
- The constant increase in ocean heat content has direct consequences for the frequency, intensity, and extent of maritime heat waves (MHWs) as well as other hot spots in the ocean.

Marine heat waves

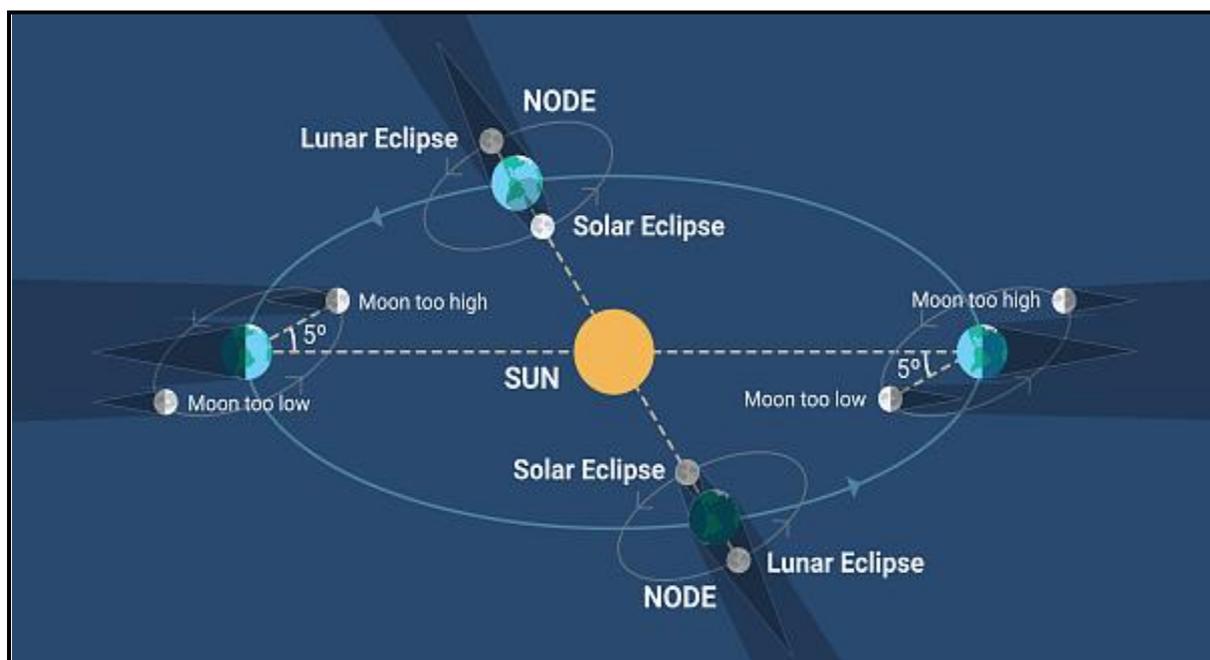
- Marine heat waves (MHWs) are prolonged periods of high temperatures in the oceans and overseas that have a significant impact on marine life.
- These heat waves are caused a rise in ocean heat content, particularly in the higher.
- What causes heat waves in the marine environment?
- Ocean currents are the most important drivers of marine heatwaves. They can create areas of warm ocean water and air-sea flux heat flux. This is the ocean's surface warming from the atmosphere. The effects of wind on marine heatwaves are both positive and negative. Climate modes such as El Nino may also affect the probability of these events.
- They are a major result of human-induced global heating.
- An MHW is when the ocean surface temperatures (up to 300 feet deep) rises by 5-7 degrees Celsius more than normal.
- Climate change and the Marine Heat Wave
- Higher ocean heat content and human-induced global warming lead to more extensive, longer-lasting and more frequent MHW. This has a significant impact on marine life and ocean ecosystems

The Impact of Marine Heat Waves

- Between 2014 and 2016, the prolonged MHW in northeast Pacific and Gulf of Alaska (known as "the blob") saw seabird deaths, declines of forage fish populations and the appearance of subtropical marine taxa in the northern Gulf of Alaska (ocean sunfish and skipjack tuna).
- Between the summer 2015 to spring 2016, 62,000 common murrelets, a major fish-eating seabird in the North Pacific, were washed ashore on beaches across California and Alaska. Scientists estimate that there were approximately 1 million birds who died in total.
- Ocean warming can also have an impact on tropical cyclones. Changes in ocean surface currents may indirectly affect the path of storms. The Gulf of Mexico was the hottest summertime spot in recorded history when it reached August 2017.
- According to a May 9, 2018, study in Earth's future, the Gulf of Mexico sea heat loss during Harvey matched Harvey's latent heat release and thereby fuelled storm. Just before hurricanes Harvey, Maria and Irma hit the Atlantic, the ocean heat content reached its highest level ever recorded.

Topic 26. PARTIAL SOLAR ECLIPSE

Important for subject: Geography



Indians will be able see the partial solar eclipse on Tuesday.

Solar Eclipse

- This is a natural phenomenon that occurs on Earth when Moon orbits between Earth and Sun. Also known as an "occultation", it is also called an occultation.
- It occurs at New Moon when the Sun & Moon are together.
- An eclipse causes the Moon's Shadow to move across the Earth's surface . It is split into two parts, the darker umbra and the lighter penumbra.
- Why aren't there solar eclipses every month?
- We would see monthly eclipses if the Moon were only slightly closer to Earth and orbited in a similar plane as Earth.
- Because the lunar orbit is elliptical with respect to Earth's orbit and tilted, we can only see 5 eclipses per calendar year.
- The Sun's geometry can affect how it is blocked.

Solar Eclipse Types

Total Solar Eclipse:

- It happens when the moon completely blocks the solar disc. The "zone of totality" is the narrowest portion of a total solar eclipse. It is the area where the Sun is blocked completely and the Moon casts its darkest shadow.
- The phenomenon known as "Bailey's Beads", occurs when sunlight shines through valleys on lunar surfaces.

Annular Solar Eclipse:

- It appears smaller than normal when the Moon orbits farther from the Sun.
- A bright ring of sunshine shines around the Moon during such an event. This is known as an "annular eclipse".

Partial Solar Eclipse:

- It happens as Earth passes through the lunar penumbra (the lighter portion of the Moon's shadow), as the Moon moves between Earth & the Sun.
- As seen from Earth, the moon does not block the entire solar disc.

- You might see anything, depending on where you are during a partial Eclipse. It could be a tiny sliver of the Sun being blocked out or a complete eclipse.

Topic 27. SC AGREE TO HEAR PLEA AGAINST FIRST AMENDMENT OF CONSTITUTION

Important for subject: Polity

Recently, the Supreme Court accepted to review the appeal challenging the Constitutionality of 1951's First amendment Act had placed reasonable restrictions under clause(2) of Article 19(a) of Freedom of Speech and Expression.

What was 1951's 1st Amendment Act?

- The state was empowered to make specific provisions for the advancement and economic development of economically and socially backward classes.
- It also allowed for the saving laws that allow for the acquisition of estates, etc. To protect land reforms and other laws in it, the Ninth Schedule was added.
- It added three additional grounds for restricting freedom of speech and expression: public order, friendly relations to foreign states and incitement towards an offense. It made the restrictions reasonable' and thus, legal in nature.
- It was provided that state trade and nationalization by the state of any trade or enterprise is not invalidated on the ground of violation or violation of the right of trade or business.

Why did amendment: occur?

- To eliminate certain practical problem screated in several cases, such as the Kameshwar Singh Case and the Romesh Thapar Case.
- For the issues in cases such as freedom of speech, acquisition Zamindari land, State Monopoly of Trade, etc

What arguments are there against this Amendment?

- The petitioners claim that it contains two objectionable inserts, which allow restrictions in the public interest and in relation to the incitement of an offense.
- The new clause (2) also omitted the expression "tends overthrows the State" as it

appeared in the original Clause (2).

- These two insertions protect Sections. 124A, i.e. sedition, and 153A, e promoting animosity between different groups on the grounds of religion, race and place of birth.
- They also prevent acts that are prejudicial to harmony. 295A ie malicious acts, which are deliberate and malicious acts intended to upset religious feelings of any group by insulting their religion or beliefs.
- 505 ie statements favourable to public mischief under the Indian Penal Code, and therefore are unconstitutional.
- It also ignores national security by dropping 'tends overthrow State'. This raises serious concern considering the dangers posed by radicalism, terrorism and religious fundamentalism to the idea of a secular democratic republic.

Topic 28. PRINTING OF THE ELECTORAL BOND

Important for subject: Polity

Two Right to Information responses from State Bank of India reveal that the Union government printed 10,000 electoral bonds each worth Rs1 crore between August1st and October29.

What's an Electoral Bond?

- Electoral bonds are financial instruments that can be bought by any citizen to make donations to political parties without disclosing the identity of the donor.
- It works like a promissory paper that can be purchased by any Indian citizen, company or firm incorporated in India through selected branches of State Bank of India.

What features are there in the Electoral Bonds Scheme?

- An individual can purchase Electoral Bonds either alone or in conjunction with others.
- These bonds can be compared to banknotes and they are free of interest.
- Only political parties registered under Section 29A of the Representation of the People Law, 1951 and that secured at least one percent of the votes in the last General Election, House of the People, or Legislative Assembly of the State shall be eligible to

get the Electoral Bonds.

How do I purchase an electoral bond?

- The State Bank of India is authorized to issue and encash Electoral Bonds via its 29 Authorized Branches.
- SBI sells bonds in denominations Rs 1,000, Rs 10,000 and Rs 1 lakh.
- These bonds can be purchased digitally or by cheque.
- An eligible Political Party can encumber the Electoral Bonds only by opening a Bank account at the Authorized Bank.
- Credit is given to the account on the same day for any Electoral Bond deposited in it by an eligible Political Party.
- Electoral Bonds are valid for 15 calendar days starting from the date of issue. No payment will be made to any payee Political Party if Electoral Bonds are deposited after the expiration of their validity period.

Topic 29. KERALA GOVERNOR WITHDRAWAL OF PLEASURE IN MINISTER

Important for subject: Polity /Governance

After Kerala Governor Arif Muhammad Khan declared that he will not be happy with K.N., Finance Minister, the latest controversy has emerged. Balagopal is the Important for subject .

- Article 164 of Constitution states that the Governor shall appoint the Chief Minister and other Ministers will be appointed by him on advice from the Chief Minister. It also says that the Ministers shall serve at the Governor's pleasure.
- In a constitutional scheme where they are appointed only on the advice of the CM, the 'pleasure' referred to also refers to the power of the Chief Minister and the Governor to fire a Minister.
- Although Governors have dismissed Chief Ministers in some cases, these were due to constitutional circumstances in which the legislative majority for the incumbent ministry was uncertain.
- Also, it is now determined by the judiciary that the question regarding majority can only be answered on the floor of legislature via a confidence vote.
- Article 164 does not allow the Governor to dismiss a Minister by himself.
- The pleasure doctrine is only valid in the constitutional sense and can only be

exercised by the Governor on the advice of Chief Minister.

Governor Discretionary powers

- Only the constitution grants the power to the Governor to act autonomously.
- The removal of a minister does not in any way make it an area where the Governor has discretion.
- The Constitution contains specific provisions that allow the Governor to exercise his independent discretion. For example,
- If he reserves the bill for consideration by the President of India the Governors can make their decision without consulting the Council of Ministers
- When is requested by the President to rule in the state. He can then act at his discretion
- He can make his own decisions if he is charged an additional fee as administrator of the Union Territory
- He must determine the amount that the Government of Assam Meghalaya Tripura and Mizoram will pay to an independent Tribal District Council as royalty from mineral exploration licenses
- When calls on the Chief Minister to obtain information concerning administrative and legislative affairs Doctrine Of Pleasure In India Article 310 Except for the provisions set out by the Constitution, a civil service of the Union works at his pleasure, while a civil servant in a State works at his pleasure (based upon English doctrines of Pleasure).
- However, this power is not absolute.
- Article 311 places certain limitations on the absolute power the President or Governor has to dismiss, remove or reduce an officer's rank.
- Article 311 protects civil servants only. Public officers are not eligible for the protective safeguards provided by Article 311. They are not available for defence personnel.
- No Posts in Doctrine of Pleasure
- The Supreme Court judges [Article 124) and High Court judges[Article 218], Comptroller General of India [Article 147.2(2)], Chief Election Commissioner [Article 324], as well as the chairman and members the Public Service Commission

[Article 317) are not Important for subject to the governor or president's pleasure, depending on the situation.

Topic 30. TOBACCO INDUSTRY

Important for subject: Governance

Tamil Nadu government's argument for tobacco against Article 47 is similar to devil quoting scripture: Madras High Court.

- The Madras High Court quashed orders issued by TN authorities under Food Safety and Standards Regulations (Prohibition and Restrictions on Sales), Regulations, 2011, and the article 47.
- State argument -raw tobacco leaves were Important for subject ed to manufacturing processes.
- Manufacturing involves removing dust and sand from the tobacco leaves, spraying them with jaggery water, and then cutting them into small pieces.
- The test results in this case indicate that nicotine was present in the sample Court-Companies that deal only with unmanufactured cigarettes and do not mix the two in any food products.
- The nicotine content has not changed by adding jaggery water.
- Jaggery water is used to spray the tobacco leaves in order to prevent brittleness and maintain the same nicotine levels after liquoring.
- The State has not banned the cultivation of tobacco like it did in Ganja.
- Indian measures to control tobacco use
- India has adopted the WHO Framework Convention on Tobacco Control (WHO FCTC) tobacco control provisions.
- Cigarettes and Other Tobacco Products Act 2003 (COTPA),
- It was intended to replace the 1975 Cigarettes Act.
- This Act was largely limited to warnings - "Cigarette Smoking Is Injurious to Health" - to be placed on cigarettes packs and in advertisements. It did not include other cigarettes.
- The 2003 Act also covered cigars, bidis and cheroots as well as hookah, chewing tobacco and pan masala.
- 2019 Promulgation of Electronic Cigarettes Ordinance

- This bans the production, manufacture, import, export, transport, sale, distribution, storage, and advertisement of e-cigarettes
- National Tobacco Quitline Services - Tobacco Quitline Services are able to reach a large amount of tobacco users.
- Their sole purpose is to provide telephone-based advice, support and referrals to help with tobacco cessation.
- Mobile Technology for Tobacco Cessation: This is an initiative that uses mobile technology to help tobacco quit. India launched Cessation via text messages in 2016 under the Digital India initiative.
- National Tobacco Control Programme NTCP- The Government of India launched the National Tobacco Control Programme NTCP in 2007-08 under the 11th Five Year-Plan.
- Make sure you are aware of the negative effects of smoking.
- Reduce the supply and production of tobacco products
- Ensure effective implementation of the provisions of "The Cigarettes and Other Tobacco Products Act (Prohibition of Advertisement and Regulation of Trade and Commerce, Production, Supply and Distribution) Act,2003" (COTPA).
- Help people stop using tobacco.
- Facilitate implementation of strategies to prevent and control tobacco as recommended by the WHO Framework Convention of Tobacco Control.

National Health Policy 2017

- It has set a lofty goal of reducing tobacco consumption by 30% by 2025.
- WHO Framework Convention on Tobacco Control
- The WHO Framework Convention on Tobacco Control (WHO FCTC) is adopted by governments and implemented.
- It is the first international agreement to be negotiated under the auspices the WHO.
- The World Health Assembly, the highest decision-making body of WHO, adopted it on 21 May 2003. It entered into effect on 27 February 2005.
- This evidence-based treaty was created in response to the growing tobacco epidemic. It reaffirms everyone's right to the best possible health.
- The FCTC has taken the following measures to stop tobacco use:

Prices and tax measures

- Warnings in large, bold fonts are included on all tobacco packaging.
- Public spaces are smoke-free.
- Ban on the marketing of tobacco products.
- Support for smokers who wish to quit.
- Interference with the tobacco industry is prohibited.
- Food Safety and Standards Regulations (Prohibition and Restrictions On Sales) Regulations, 2011. Regulation prohibits the use of tobacco and nicotine in food products

Status of tobacco

- The Indian government has supported the growth of the tobacco industry since 1947.
- India has seven tobacco research centres.
- They are located in Jeelugumilli and Kandukuru, A.P.; Guntur, A.P.; Kalavacherla, A.P. Hunsur, Karnataka. Vedsandur. Tamil Nadu, Dinhata. West Bengal. Rajamundry houses core research institute.
- Tobacco Board Guntur was established by the government to promote Indian tobacco production, sales and exports.
- The Indian Council of Agricultural Research oversees the Central Tobacco Research Institute.
- India is second in quantity and third in exports and producers after Brazil and China, respectively.

Topic 31. NATIONAL CRISIS MANAGEMENT COMMITTEE (NCCM)

Important for subject: Government

Under the Chairmanship of Shri Rajiv Gauba, Cabinet Secretary, the National Crisis Management Committee (NCCM), met today to review the preparedness of Central Ministries/Agencies and State/UT governments for the possible cyclonic storm that could hit the Bay of Bengal.

- The Cabinet Committee on Security and National Crisis Management Committee are key national committees that participate in top-level decision making w r t Disaster Management.

- It addresses major crises that have national or serious ramifications.

Key functions

- Supervise the command, control, and coordination of disaster response.
- As needed, give direction to Crisis Management Group (CMG).

Composition:

- Cabinet Secretary (Chairperson).
- Secretaries of Ministries/Departments and agencies with Disaster Management responsibilities

Topic 32. MIGRANT LABOUR

Important for subject: International relations

The only way to stop the exploitation and exploitation of low-skilled migrants is through a regional alliance between South Asian countries and Gulf countries

- Nearly 50% of Indian migrants come from the Gulf.
- "Kafala", or the Gulf's sponsorship system, allows employers to have significant control over the lives and livelihoods of migrant workers.
- The countries of the Gulf Cooperation Council (GCC), have been accused by Covid-19 of failing to provide healthcare services, employment, and social protection for workers.
- According to the Return Migration Survey, 2,000 Vande Bharat re-entrants to Kerala found that 47% of them had lost their jobs and 39% reported non-payment or reduction in wages.
- According to the Guardian, 6500 migrants from South Asia died in Qatar over the past 10 years.
- Indians were the most fatal -- 2,711 people died -- followed closely by migrants from Nepal Bangladesh Pakistan Sri Lanka and Sri Lanka.

Kafala system

- The 'kafala' system is a system that establishes obligations regarding the treatment and protection for foreign 'guests. Kafala in Arabic means "to guarantee" or "to take care".
- The system makes it so that migrant workers' immigration status is legally tied to a

sponsor or employer ('kafeels') for the duration of the contract. Without the written consent of the kafeel, the migrant worker can't enter the country, transfer work or leave the country for any reason.

Abu Dhabi Dialogue

- It serves as a forum regional for cooperation between Asian countries which are the source and destination of labour.
- The Abu Dhabi Dialogue is made up of 18 countries. 11 countries of origin: Afghanistan Bangladesh, China, India Nepal, Pakistan Sri Lanka, Thailand and Vietnam. Seven countries of destination are Bahrain, Kuwait Oman Qatar, Saudi Arabia and the United Arab Emirates (UAE). As Observer States, the Republic of Korea and Japan as well as Singapore are involved.
- The ADD is a platform that allows countries of origin and destination, to discuss the management or temporary labour mobility in Asia.
- It's an action-oriented dialog with the four main areas of partnership between Member States:
 - Information sharing on labour market trends, skills profiles and temporary contractual workers. Harmonize labour supply/demand. Prevent illegal recruitment. Protect migrant workers. Develop a framework to manage temporary contractual labour. Advance the mutual interests of Member States
- Portal for Consular Grievances Monitoring named MADAD (Help), because You Are Us.
- MADAD allows Indian citizens to online file grievances about consular services abroad through an electronic portal.
- It was inaugurated by the Minister for External Affairs at the MEA Headquarters in New Delhi.
- Features MADAD
 - MADAD allows members of the public to directly register grievances and effectively monitor the grievance handling process until it is resolved.
 - It includes many innovative features, including flexible architecture to deal with a variety grievances, linking grievances on basis of passport number to avoid duplicates and automatic escalation or enhancement of priority.

- A dashboard with a colour coded color will identify the authorities and assign them responsibility. If the response is not received within a specified time, this dashboard will be changed to a different colour.
- It also features a colour code system that uses a red-amber-green color pattern. It will monitor the performance of authorities in redressing grievances. The case is cleared will be marked in green, and the cases that are pending will be marked in red.

First International Migration Review Forum

- IMRF's goal is to assess the progress at all levels of implementation of the Global Compact for Safe, Orderly and Regular Migration.
- Global Compact for Migration is the first intergovernmental agreement ever on UN agreements on a common approach for managing international migration.
- GCM has 23 objectives that cover all aspects of migration ("360 degree") and a range of actions drawn from best practice that States can use to implement their national policies.
- 2018 was the year that UN Member States agreed to examine the progress made at local, national, and global levels in implementing Global Compact for Safe, Orderly and Regular Migration.
- This will be done within the UN framework using a State-led approach and the participation of all stakeholders.
- The President of the UN General Assembly will host the quadrennial IMRF.
- It includes four interactive multi-stakeholder roundtables, a policy dialogue and a plenary.
- The International Organisation for Migration acts as the Coordinator for the UN Network on Migration. It ensures that the GCM is implemented in a coherent and effective manner across the entire system and supports the organisation and running of the four-day IMRF.

Topic 33. ARAB SUMMIT

Important for subject: International relations

Saudi Arabia's Crown Prince Mohammed Bin Salman won't attend an upcoming Arab summit, in accordance with doctors' advice to avoid travel.

What's the Arab League?

- The Arab League is an alliance of Arab-speaking African and Asian nations.
- It was established in Cairo in 1945 in order to promote independence, sovereignty, and the interests of its member nations and observers.
- The organization was founded with six founding members, namely Egypt, Iraq, Jordan, Lebanon, Saudi Arabia and Syria. Now has 22 member nations, and four observers states.
- To ensure its goals are met, the League is bound by a charter.
- Each member state is entitled to one vote in the Council of the Arab League. Decisions are binding only for the states that have voted.

Topic 34. THE DISMAL CASE OF SLASHING SCHEMES AND CUTTING FUNDS

Important for subject: Government Schemes

Over 50% of central government-sponsored schemes have been eliminated, subsumed and revamped over the last three years.

What's the problem?

- The impact of the varied between Ministries. For the Union, this is an example.
- Ministry of Women and Child Development has only three schemes out of 19, i.e. Mission Shakti, Mission Vatsalya, Saksham Anganwadi and Poshan 2.0. This replaces 14 schemes that included Beti Bachao and Beti Padhao.
- Only two schemes are left out of 12 in the case of the Ministry of Animal Husbandry and Dairy.
- The Ministry has also ended three schemes, including Dairying through Cooperatives and National Dairy Plan II.
- The Ministry of Agriculture and Farmers Welfare has three of the 20 schemes, namely

the Krishonnati Yojana and the Integrated Scheme for Agricultural Cooperatives.

- Information on the National Project on Organic Farming and the National Agroforestry Policy is not available.
- The Nirbhaya Fund (2013), which aims to improve public safety for women in public places, has been cut in funding. Rs. 1000 annually (2013-16), but is largely unspent
- NPK fertilizers allocations have fallen by 35% compared to the revised FY 21-22 estimates.
- In the FY22-23 Budget, the allocation for the Mahatma Gandhi National Rural Employment Guarantee Act was reduced by 25%. The budget is now Rs. 73,000 crore.
- Garib Kalyan Rojgar abhiyaan Rs. 39,293 crore was spent against a budget of Rs. 50,000 crore.
- Salaries of Accredited Social Health Activists have been delayed up to 6 months.
- Additionally, funding for r habitat development under Ministry of Environment, Forest and Climate Change was reduced, along with the allocations to Project Tiger, both of which were slashed.

Why rationalisation?

- Numerous Finance Commissions, including the 15th Commission, recommended rationalizing CSS schemes.
- Rationalization of the CSSs would allow for the best utilization of resources with better outcomes by area-specific interventions.
- This would ensure a greater reach of benefits to target groups, and result in greater autonomy and fiscal space available to states.
- 2015 saw the creation of a sub-group by the Central Government of chief ministers to rationalize CSS.
- They performed a reshaping CSSs into 28 umbrellas.
- This was done to increase the impact of CSSs, preserve their budget allocation and allow states flexibility in scheme implementation.

What needs to be done?

- The state governments should be able to make sure that the schemes are beneficial for

the intended groups when they implement them.

- There should be discussions with interested stakeholders about the restructuring CSS.
- Blockages in budgetary procedures in the schemes such as delays in funds flow and in releasing sanctions orders for spending must be addressed.
- There is a need for a capable civil service to meet today's challenges by running a modern economy, providing better public goods and providing a corrupt-free welfare system.
- Instead of having fewer government programs, we need to raise our expectations for better public service delivery

Topic 35. SANTHAL REBELLION

Important for subject: History

Peter Stanley, an Australian historian and author, has published Hul! Hul! Hul!

- The Santhal rebellion (also known by the Hulrevolt) began on 30 June 1855. It was led by prominent leaders such as Sidhu and Chand. Bhairav, and their two sisters Phulo.
- The Santhals were tribal people who lived in the Rajmahal forest hills.
- 1832 The Damini-Koh was delineated by the East India Company from the region Jharkhand. It was given to Santhals for settlement with a promise of no interference in their land.
- The rent paid to the Santhals rose to an exorbitant level due to changing times and increased demand from the Britishers. The Santhals found themselves in a position where they could only revolt against the Britishers, Zamindars, and eventually, Santhal Rebellion.

Causes for Santhal Rebellion

- Economic - Money lenders took advantage of the Santhals' high cost by lending them money. The rent on land also rose.
- Religious The Christian Missionaries targeted Indian tribes and threatened the traditional beliefs and codes of conduct of Santhals.
- Political The Manjhi and Parha Pantchayat Systems of Santhals were heavily affected

by British Regulations.

The Rebellion

- Anguished and depressed, the Santhals took part in guerrilla warfare and took over 1855–56. The Santhals also formed their own forces which included farmers and marched to the end of their oppressors. The postal communications and rail line were destroyed by the Santhal army.
- The rebellion was led by Sidhu, one brother to Kanhu Murmu and the other brother to Sidhu. Their sisters Phulo (and Jhano Murmu) were also involved. They militarised more than 10,000 people. Also, warehouses and stores were burgled and set on fire. They then headed for Calcutta (now Kolkata) to find the headquarters.
- The government received word of the rebellion and sent the military to take out the Santhals. In revenge for bows and arrows, heavy weapons were loaded. Their houses were destroyed by elephants.
- Sidhu-Kanhu, a brother duo, were both arrested and executed. Phulo and Jhano Murmu also entered the enemy camp and killed 21 soldiers. The rebellion met a tragic end. To end their rebellion, the British army set fire to villages and killed or raped more than 15,000 Santhals.
- The Santhals were unable to defeat the total power of the government, and they were repressed.

Significance

- In 1876, the British passed the Santhal Parganas Tenancy Act. This provided some protection for tribals from exploitation.

Topic 36. FLORICULTURE

Important for subject: Agriculture

The GVO (gross value of output) for floriculture in the northeastern States has declined, except for Assam.

Floriculture-gross Value of Output

- (GVO), 2011-12 to 2019-20. (Growth rate).
- India +55 % (Rs26.987.41 Crore in 2019-20 from Rs17.365.38 crores in 2011-12).

- Decline in northeastern States, except Assam -5 100% Assam+251% Arunachal Pradesh and Sikkim, Nagaland, Manipur -31% Floriculture Export +48% (Rs541.61 Crore in 2019-20, from Rs365.32crore in 2011-12).
- However, its contribution to the value is still around 2 percent. Source: National Statistical Office data
- Floriculture in India: This industry is known as a "sunrise industry" and has been granted 100% export-oriented status.
- Commercial floriculture is more productive than other field crops.
- Agricultural and Processed Food Products Export Development Authority is responsible to promote and develop floriculture in India.

Varieties:

- Most floral products are cut flowers, pot plants and cut foliage.
- Roses, Carnation and Chrysanthemum are all cut flowers.
- Cut flowers are flowers (often with a stem and leaf), that have been taken from the plants bearing them. For decorative purposes, it is often removed from the plant.
- Gerberas, Carnation, etc. They can be grown in greenhouses.
- Open field crops include Chrysanthemums, Roses and Gaillardia, Lily Marygolts, Aster, Tuberose and others.

Areas for Cultivation:

- Major floriculture centres-Kerala (16.5%), Tamil Nadu (11.4%), Karnataka (11.1%), Madhya Pradesh (11.1%), Uttar Pradesh (7%) together with other producing states such as Andhra Pradesh and West Bengal, Mizoram and Gujarat.
- More than half of all floriculture products are made in Karnataka and Andhra Pradesh, Tamil Nadu and Madhya Pradesh. According to the National Horticulture Database, 322 thousand hectares were under cultivation for floriculture in 2020-21. This includes 2152 thousand tonnes loose flowers and 828 000 tonnes of cut flowers.
- The country exported 23,597.17MT worth of floriculture products to other countries (a total value of 103.47 USD millions in 2021-22).
- Major Export Destinations (2021-22).

Mission for Integrated Development of Horticulture Scheme:

- MIDH is a Centrally Sponsored Scheme that promotes holistic growth in the horticulture industry. It covers fruits, vegetables, root & tube crops, mushrooms and spices.
- Nodal Ministry The Ministry of Agriculture and Farmers Welfare has implemented MIDH since 2014-15.
- MIDH is implemented by Green Revolution - Krishonnati Yajana.
- Funding Model: Government of India contributes 60% of the total outlay for all states, except those in North East or Himalayas. State Governments contribute 40%.
- GoI contributes 90% to the North Eastern States and Himalayan States.
- The GOI contributes 100 percent to the National Horticulture Board, Coconut Development Board (CDB), Central Institute for Horticulture and Nagaland (CIH), National Level Agencies [NLA]).
- MIDH provides administrative and technical support to State Governments/ State Horticulture Missions for the Saffron Mission, and other horticulture-related activities Rashtriya Krishi Vikas Yojana/NMSA.

Components of MIDH:

- National Horticulture Mission (NHM):
- State Horticulture Missions are currently implementing it in select districts of 18 States, 6 Union Territories.
- Horticulture Mission for North East & Himalayan States (HMNEH):
- HMNEH is being used to develop Horticulture in the North East and Himalayan States.

National Horticulture Board:

- NHB implements various schemes under MIDH across all States and UTs.
- It was established in 1984 under the Ministry of Agriculture and Farmers Welfare and registered as a society under Societies Registration. It aims to create production clusters/hubs to integrate Hi-tech Commercial Horticulture, develop Post-harvest and cold-chain infrastructure, and ensure availability of high-quality planting material.

Coconut Development Board (CDB):

- CDB implements various schemes under MIDH across all Coconut-growing states of the country.
 - Central Institute for Horticulture
 - CIH was founded in Nagaland at Medi Zip Hima in 2006-07 to provide technical support through capacity building and training for farmers and field functionaries in the North Eastern Region.
-

PIONEER ACADEMY

PUNE



UPSC MPSC NDA CDS

PUNE Address :
 204/5, 304/5, 2nd & 3rd Flr., Pinnacle Prestige (Near Durvankur Hotel), Above Cosmos Bank, Tilak Road, Sadashiv Path, Pune - 411 030
 Mob :91453 39324 / 25

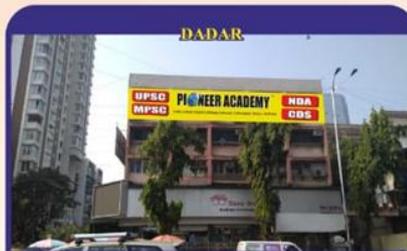
THANE



UPSC MPSC NDA CDS

THANE Address :
 201/202/203/204, 2nd Flr., Lalzer Arcade, Raghoba Shankar Road, Chendani, Thane (W) - 400 601
 Mob :75060 10635

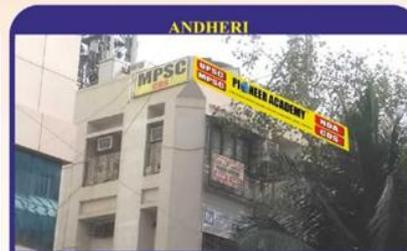
DADAR



UPSC MPSC NDA CDS

DADAR Address :
 306/7/8, 3rd Flr., Blue Pearl Society, Senapati Bapat Road, Plot No. 14, Near Janalia Cloth Market, Near Dadar Railway Station, Dadar (W), Mumbai - 400 028
 Mob : 93241 69627 / 91375 41508

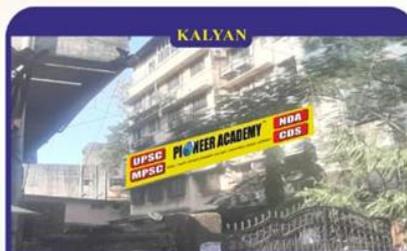
ANDHERI



UPSC MPSC NDA CDS

ANDHERI Address :
 3rd Flr., Syndicate Chamber, Above Vaibhav Restaurant, Next to Better Home Hotel, Opp. Andheri (E) - 400 601
 Mob : 84518 55673 / 70302 92316

KALYAN



UPSC MPSC NDA CDS

KALYAN Address:
 2nd Flr., 2, Suyash Plaza, Opp. Railway Station, Near Deepak Hotel, Kalyan (W) - 421 301
 Mob.: 81691 40960

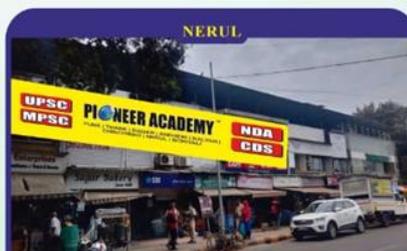
PIMPRI-CHINCHWAD



UPSC MPSC NDA CDS

PIMPRI CHINCHWAD Address:
 3rd Flr., Kunal Plaza, Mumbai Pune Road, Chinchwad Station, Chinchwad, Pune - 411019
 Mob.: 9975459324 / 9503459325

NERUL



UPSC MPSC NDA CDS

NERUL ACADEMY
 16, 20 & 21, 1st Flr., Om Surya complex, Opp. Nerul Railway station, Beside Abhodaya Bank, Sector 15, Nerul (E), Navi Mumbai - 400707
 Mob.: 93212 87241 / 93212 89027

BORIVALI



UPSC MPSC NDA CDS

BORIVALI ACADEMY
 313/314, 3rd Flr., V Star Plaza, Chandavarkar Rd., Near Saraswat Bank, Sundar Nagar, Borivali (W), Mumbai - 400092
 Mob.: 93212 49713 / 96533 04874

Email : pioneeracademypace@gmail.com
 Website : www.pioneeracademypace.com / .in
 Contact : + 91 75060 10635

Success is born of action...