



PLUTUS ACADEMY

Argasia Education PVT. Ltd. (GST NO-09AAPCA1478E1ZH)
Address: Basement C59 Noida, opposite to Priyagold
Building gate, Sector 2, Pocket I, Noida, Uttar Pradesh
201301, CONTACT NO- 8448440231

CONTENT BY -JITHIN LAL VJ

GENERAL STUDIES FACULTY

1. What are Medicanes?

The Mediterranean hurricanes are called medicanes. The scientists have recently warned that these hurricanes have now become more frequent lately. This is mainly due to human induced climate change.

How are medicanes different from tropical cyclones?

The medicanes are usually formed during the winter season. They occur once or twice a year. They occur in colder regions as compared to tropical cyclones. Also, their wind speed is lower than that of tropical cyclones. They are also smaller in diameter. The core of medicanes is colder as compared to that of the tropical cyclones.

Why have medicanes increased lately?

They have increased in number lately because of global warming. The increased sea surface temperature of the Mediterranean sea paves way for these cyclones to take more tropical appearances. The increase in SST is also increasing the wind speed of these storms and causing heavy rainfall. Earlier medicanes were common only in Mediterranean sea. However, in the past two decades they have even formed over the Black Sea. Two such Storms were formed recently, one in 2005 and the other in 2012.

What is unusual in Mediterranean sea?

The Mediterranean sea is generally dry and evaporating. Therefore, cyclonic storms do not form easily and are also hard to detect. However, the Mediterranean cyclones have increased lately due to the increase in Sea Surface temperature of the sea. This has caused severe flooding in Italy, France and Spain.

Effect of ENSO on Medicanes

ENSO is El Nino Southern Oscillation that is developed over the Pacific Ocean. The 2020 year according to the World Meteorological Organisation is a La Nina year. Usually La Nina reduces the number of hurricanes. But this year in spite of a mild La Nina in the Pacific, hurricanes are very active. This means that the impacts of El Nino southern

oscillation is getting modulated due to global warming of all oceans including the Mediterranean. This is why in spite of a mild La Nina the number of Mediterranean cyclones have increased.

2.Arsenic affected habitations in India increase by 145% in the last five years

The minister of state of Jal Shakti Shri Ratan Lal Kataria recently provided a written reply about Arsenic affected habitations in the country. According to him, the arsenic affected habitations in the country has increased by 145 % in the last 5 years.

Highlights

In 2015, the number of arsenic affected habitations were 1800. This has increased to 4,421 in September 2020. These habitations are mainly found in Bihar, Assam, Punjab, West Bengal and Uttar Pradesh. The state of Jharkhand that had no such habitation in 2015 has now two Arsenic affected habitations. The state of Karnataka that had nine such habitations in 2015 had none in 2020. Most of the arsenic affected habitations or found along the Ganga and Brahmaputra plains. Of all the states Assam had the highest share of such habitations.

Fluoride affected habitations

On the other hand, the number of fluoride-affected habitations have come down in the last 5 years. The number of fluoride-affected habitations in 2015 were 12,727. This has come down to 5,485 in September 2020. Of all the states Rajasthan had the highest number of Fluoride-affected habitations followed by Bihar.

What are arsenic affected habitations?

Habitations or group of households at a community level in a town or village. They are the smallest settlements that hold 10,200 households. The term arsenic affected implies that the underground water and the other water bodies such as Ponds and lakes in the region have arsenic levels greater than that of the threshold. According to the World Health Organisation the permissible limit of arsenic in drinking water is 10 micrograms per litre. It is the same in India as well. In India the limit is fixed by Bureau of Indian Standards.

Role of Jal Jeevan Mission

The Jal Jeevan Mission that was started in 2019 aimed to provide drinking water to every household by 2024. Under the scheme, the habitations where water quality has been affected are prioritised. The scheme aims to install community water purification plants in these regions

3. September 22: World Rhino Day

Every year the World Rhino Day is celebrated on September 22nd by the World Wildlife Fund and several other international organisations. The day is celebrated to create awareness about the threats faced by 5 rhinoceros species living in Asia and Africa. The day also celebrates these five rhinoceros species.

Highlights

The first world rhino day was announced by the World Wildlife Fund South Africa in 2010. The days being celebrated since then. This year the world rhino Day is being celebrated under the theme

Theme: Five Rhino Species Forever

IUCN status of the five rhinoceros species

- Javan rhinos: critically endangered
- sumatran rhinos: critically endangered
- black rhinos: critically endangered
- white rhinos: near threatened
- greater one horned rhinos: vulnerable

World Rhino Day in India

The Union Minister Shri Prakash Javadekar presided over a meeting on the sidelines of celebration of world rhino day in the country. According to the Minister, India is home to the largest number of Greater one horned rhinoceros in the world. There are around 3000 one horned rhinoceros in India. They are spread in the states of Assam, West Bengal and Uttar Pradesh. India has launched a National Conservation strategy for Indian one horned Rhino.

National rhino conservation strategy

It includes both India and Nepal in the conservation of Greater one horned rhinoceros. The current population of one horned Rhinos in the world is 3584. Of this India has 2938 and Nepal has 646 respectively.

According to the strategy the single population of rhinos in Valmiki Tiger Reserve in India, Shuklaphanta in Nepal and Chitwan National Park in Nepal and Dudhwa is separated by political boundary between the countries. Therefore, it calls to manage the populations in the two countries under the same protocol. The entire strategy has been built based upon this concept.

Rhino vision of India 2020

It was launched in 2005 with the vision to attain a wild population of greater one horned rhinos to at least 3000 in the state of Assam by 2020.

4.Epidemic Diseases (Amendment) bill passed in Lok Sabha

On September 21, 2020, Lok Sabha passed Epidemic Diseases (Amendment) Bill 2020. It was first introduced in Rajya Sabha. The bill amends the Epidemic Diseases act 1897.

Highlights

The act is being amended to protect Health Care personnel combating in the front line against pandemic and epidemic. The bill replaces the epidemic diseases (amendment) Ordinance that was promulgated in April 2020. The bill also expands the powers of the Central Government in preventing the spread of pandemic diseases.

Definitions in the bill

The bill defines the health care professional as a person who is at the risk of contracting the epidemic disease when he or she is carrying out his or her duties. This includes both public and clinical Healthcare providers. It also includes any person who has been empowered under the act to make prompt measures in order to prevent the outbreak of the disease. It also includes other persons that are designated by the respective state governments.

The Bill also defines an act of violence. This becomes important because during the initial stages of the outbreak of covid-19 several patients refused to co-operate with nurses and doctors. In due course, they even engaged in an Act of violence. Tablighi jamaat was one such scenario where the participants of the event refused to cooperate with the healthcare professional. The Tablighi Jamaat was a muslim conference.

The act of violence has been defined as following

- acts that impact living or working conditions
- the acts that harm hurt injured are creates danger to life
- damage to property documents of Healthcare personnel
- obstruction in discharge of duties

Compensation

Persons who are convicted under the will have to pay compensation to the health care professional whom they had hurt.

Powers of Central Government

The act empowers the central government during a pandemic situation in the following ways

- The Government of India can inspect any ship or vessel that is arriving or leaving a port.
- It allows detention of a person who intends to travel from the port during the outbreak

Central Government can inspect trains buses ships vessel aircraft that all living or entering a port or an aerodrome

5. Airbus to launch World's first Commercial Hydrogen aircraft by 2035

On September 21 2020 the aviation company airbus launched three concepts for the first zero emission commercial aircraft. Their aircraft craft is to enter into service by 2035.

Highlights

The three concepts of the company have been introduced under the codename ZEROe. The concept of are as follows

- Turbofan design. It can accommodate 120 to 200 passengers and can fly at a range of 2000 plus nautical miles.
- Blended wing body design. This type can accommodate up to 200 passengers. Here the wings merge with the main body of the aircraft.
- Turboprop design. This type of aircraft can accommodate up to 200 passengers. It is capable of travelling at a speed of 1000 + nautical miles. They are perfect for short haul trips.

Background

Aviation emissions contribute 5 percent of anthropogenic climate change. Therefore, it is essential to shift towards clean aircraft fuels such as hydrogen.

Concerns

The airports will have to adopt hydrogen refueling infrastructure in order to make the model a success. Also, the governments should show interest in adopting the ambitious objectives.

First hydrogen aircraft

The hydrogen aircraft designed and created by airbus is the first commercial hydrogen powered aircraft. Prior to this the Russian manufacturer Tupolev had built a prototype called Tu-154. This was the first experimental aircraft that operated on liquid nitrogen.

Hydrogen

Though hydrogen is a clean fuel, it is more expensive than that of fossil fuels. This is mainly because there are several obstacles in using hydrogen as fuel. Hydrogen is the lightest element and hence escapes towards the upper atmosphere very easily. And so, it is rarely found in its pure form.

Hydrogen production

Hydrogen is generally produced from methane or by electrolysis of water. In 2020, hydrogen is predominantly produced from fossil fuels by steam reforming, coal

gasification or by partial oxidation of Methane. Out of these three, steam Methane reforming is the current leading technology in 2020. However, it releases carbon dioxide and carbon monoxide into the atmosphere.

World largest hydrogen production centre

The world's largest hydrogen production Centre is the Fukushima hydrogen energy research field that is located in Japan.

6.O-SMART Scheme: Tsunami Early Warning Centre providing services to 25 Indian Ocean Countries

The Union Minister of Science and Technology, Earth Sciences and Health and Family Welfare Dr Harsha Vardhan recently provided a written reply in Rajya Sabha. According to his reply, the Indian tsunami early warning Centre is currently serving 25 Indian ocean countries. This is being implemented under the O-SMART scheme of the Ministry of earth sciences.

Key features of the O-SMART scheme

The following are the main features of the O-SMART scheme

- O-SMART is Ocean Services, Modelling, Applications, Resources and Technology scheme.
- The system generates and updates information on Marine living resources in the Indian Exclusive Economic Zone.
- It monitors free water pollutants. This data is then used for health assessment of coastal waters of India. The scheme also develops shoreline change maps that help assist the coastal erosion due to anthropogenic activities and natural calamities.
- It develops a wide range of ocean observation systems. These systems in turn help acquire real time data from the seas in India.
- It provides warnings, advisories and user-oriented Ocean information for the benefit of the society.
- It develops Ocean forecast and Re analysis systems.
- The scheme develops technologies that are used to tap marine bio-resources.
- It provides algorithms that help in validating satellite data related to coastal research.
- It is responsible for establishing water treatment facilities along coastlines.
- It is responsible for the operation and maintenance of 5 research vessels that are deployed in Ocean survey monitoring and demonstration programmes.
- The scheme also carries out exploration of polymetallic nodules from the water depth of 5500 metres. This was allocated by the United Nations in the central

Indian ocean basin. The International Organisation has a located 75000square kilometre of maritime area to carry out investigations of gas hydrates.

Indian tsunami early warning centre

The centre was established at Indian National Centre for Ocean information Services (INCOIS) Hyderabad. It operates under the Ministry of earth sciences. The centre is currently providing Tsunami warning services to over 25 Indian ocean countries. This is being done under the intergovernmental oceanographic commission of UNESCO framework.

INCOIS

- The INCOIS has established strong motion accelerometers in Andaman and Nicobar Islands and global Navigation satellite system. 20 sensors help in quick and reliable estimation of earthquake sources.
- It also conducts training and exercises on preparedness during tsunami conditions and creates awareness about Tsunami.
- It is also implementing the tsunami ready program full stop, the program was introduced by UNESCO.

7.Gol: 21 Neutrino Observatories to be set up in the country

The Union Minister of state of North Eastern region Dr Jitendra Singh in a written reply said that around 21 neutrino observatory or to be set up in the country.

Highlights

According to the information provided by the Minister the observatory is or to be located as follows

- Six observatories in Karnataka
- Four observatories in Uttarakhand.
- One observatory in each of the following states that are to be operated by the Indian Institute of geomagnetism
- Andhra Pradesh
- Assam
- Tamil Nadu
- Gujarat
- Meghalaya
- Maharashtra
- Jammu and Kashmir
- Rajasthan
- Uttar Pradesh
- Puducherry

- Andaman and Nicobar Island

The observatory will provide more information about the properties of Neutrino particles. The observatories will study about the neutrino particles from the Sun and from the earth's atmosphere.

Indian neutrino observatory

The observatory is being constructed in Bodi West Hills located in Theni district of Tamil Nadu. This observatory will study only atmospheric neutrinos. The Solar neutrinos on other hand have much lower energy and thus more powerful detectors are required.

The Tata Institute of Fundamental Research is the nodal agency implementing the project. The observatory is jointly built by the department of Science and Technology and Department of Atomic Energy.

The laboratory will require adequate shielding to the detector. This is to seal the vibrations created from anthropogenic and earthly activities.

Concerns raised

The observatory is constructed underground. According to the environmentalists, the explosions, blasts and vibrations from the construction will badly affected the ecologically fragile Western Ghats. The Mathikettan Shola National Park is very close to the observatory and will face adverse impacts.

What is a neutrino?

Neutrino is a tiny elementary particle. It is not a part of the atom. Neutrinos are of tiny mass and have no charge. They interact with other matter particles very weakly. Hence, the information carried by them from distant galaxies and stars are not disturbed by other astronomical bodies.