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6 Extinct species : A particular species is called extinct when there are no more individuals of that species alive anywhere in the world or in a particular place. This usually happens due to change in environment.

eg Dodo

Endangered species : species which are likely to become extinct in the near future either from the world or a particular place.

eg Asiatic Lion.

Endemic species : Species of plants and animals which are found in just one particular region and nowhere else in the world.

eg Asiatic lion.

Rare species : Species that are uncommon and are in small population.

eg Black buck

5 Justify :

I India is considered as mega biodiversity nation. It is because of the presence of abundant flora and fauna present in this region. Many species are endemic to some regions. Being so diverse, it has become a biodiversity hotspot as it has abundance of biodiversity, but has not been taken proper care of. It has been losing its original habitat. It is our duty to protect it. India is one of the 25 biologically rich areas which are termed as biodiversity hotspots across the globe.

II A harsh Artic ecosystem can have a much shorter food chain/ less complex food web than a tropical one. It is because far less species are adapted to live in cold regions than those who live in tropical regions. As less species are involved in the food chain, it would be less complex and would be shorter.

↗ (Lindemann energy model)

Following the (ten percent rule) if the producers are more and healthier the ecosystem flourishes as there is more energy for more animals to be able to supported. Here also tropical food chain wins as it is more habitable than the Artic ecosystem

4 (1) Deep ocean exploration has resulted in the discovery of abundant life in deep ocean floor, which are otherwise considered as unsuitable for survival. How does life survive in such cases! How does energy flow in such ecosystems?

Due to many expeditions and curiosity of people to find the treasures of the depths of the deep blue sea, many discoveries of different animal lives have been made. They all are highly adapted animals or plants, ~~which have become~~ whose structures and functioning depend on the surroundings. Even without sunlight, most life in deep sea depends on sun. Example - phytoplankton. The animals depends on resistance and resilience. Energy flows through Lindemann energy model, where producers are more and full of energy.

(2) 500 million tons of methane is produced by archaea in deep ocean, Methane is extremely dangerous. If a large amount is released in the atmosphere the temperatures ~~with~~ would increase as CO_2 traps in heat. This will result in melting of glaciers also called extreme global warming

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(a) Positive points of genetically modified food :

- Give food desirable traits

eg Apples which turn less brown / strawberries resistant to frost

- Make crops disease resistant as they grow. eg - Hawaiian papaya
- Increase the overall yield of crops.
- To increase nutritional value or enhance flavour (Yellow rice)
- (Increase vitamin content)

Delayed ripening, edible vaccine, stress tolarance

eg Bt corn, golden rice.

Negativities

- We dont know about its long-term performance and safety
- Many health issues associate with the GMO.

eg allergies and many unknown health risks

(b) Conservation of aquatic biodiversity

* An aquatic bio reserve is a defined space within a water body in which fishing is banned and other restrictions are placed to protect flora & fauna & habitats.
* Regulatory measures must be taken on wastewater discharge in the water body to conserve biological diversity.
* Increase public awareness to conserve through educational programs, incentive programs and volunteered monitoring programs.

Plantation of trees in the catchment area of water body prevent soil erosion and subsequently reduce the problem of siltation in water body, resulting better survival of organisms.

Avoid establishments of industries, chemical plants & thermal power plants near water resources

Effect of human: Fertilizers → remove NH_3 & NH_4^+ to make fertilizers
water pollution: fertilizers run into water bodies

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- Ammonia and nitrates move in ecosystem by the process of cycles.

Nitrogen cycle

Rhizobium bacteria convert most NH_3, NH_4^+ in soil to NO_3^-, which are easily taken up by the roots of plants. The plants use these forms of N_2 to produce proteins, nucleic acid and vitamins

Animals which eat plants eventually consume these nitrogen-containing compounds, as detritus feeders and decomposers.

Different specialise bacteria in waterlogged soil and in bottom sediments of lakes convert these N_2 compounds back to gas, which is released in the atmosphere.

Phosphorus cycle

Phosphate ions are a plant nutrient. It does not cycle through atmosphere and is very slow.

The ions are carried by water into the soil where they are absorbed by roots of plants and producers.

Then these are transferred by food webs from producers to consumers and then to detritus feeders and decomposers.

1(a) Process begins with establishment of few pioneer species which get replaced by species of increasing complexity.

- Establishment of pioneer species at at bare site cause change soil structure and nutrient content followed by changes in community
- New species form due to change in physical factors
- New species are introduced into the area.
- The cycle ends after reaching climax community
- Now the ecosystem is in balance, until disturbed by external

(b) Cows are below humans in the food chain. They eat ~~producers directly~~ plants directly. Nationwide worshipping of cows has increased their numbers. To keep them fed, more plants are required. So the number of plants may decrease. Now there would be more organisms in the middle of food chain. To tackle the situation, the diet of the cows can be changed.