EXERCISE QUESTIONS

CHAPTER-15 BIODIVERSITY AND CONSERVATION

1.Name the three important components of biodiversity.

Ans - The variety of living organisms found in various habitats is referred to as biodiversity. It takes into account the diversity of life forms from all habitats, such as the land, the air, and the sea. The following three elements of biodiversity are crucial: Biological variety Animal variety diversity of ecosystems

2. How do ecologists estimate the total number of species present in the world?

Ans - There is a huge range of living things on the planet. It is approximately seven millions, researchers think.

Ecologists estimate the overall number of species by statistically comparing the species richness of a well-researched collection of insects from temperate and tropical climates. The total number of species existent on Earth is then determined by extrapolating these ratios to include more categories of plants and animals.

3. Give three hypotheses for explaining why tropics show greatest levels of species richness.

Ans - The greatest level of species richness is seen in the tropics for the following reasons (hypotheses)

1. Compared to temperate regions, tropical regions have a more consistent climate. Therefore, the local communities continue to exist in an environment free from natural disruptions.

2. A vast variety of different species can live in and thrive in tropical communities. The fundamental reason for this is that tropics receive more solar energy

3. Warm temperatures and heavy humidity are common in the tropics. Numerous types of fungi, plants, and algae thrive in such conditions.

4. What is the significance of the slope of regression in a species – area relationship?

Ans - For the purpose of determining a species-area association, the slope of the regression (z) is of significant importance. The value of the slopes of regression in smaller regions (where the species-area relationship is examined) has been found to be similar regardless of the taxonomic category or the locale. However, the slope of regression is substantially steeper when the same study is performed on bigger areas.

5. What are the major causes of species losses in a geographical region?

Ans - The variety of living organisms found in various habitats is referred to as biodiversity. It takes into account the diversity of life forms from all habitats, such as the land, the air, and the sea. Globally, the amount of biodiversity is rapidly dwindling. the main reasons for are as follows:

(i) the worldwide decline in biodiversity

I Loss and fragmentation of habitats: Different organisms' habitats are changed or deforestation, other unchecked and unsustainable human activity,Cut and burn urbanisation, mining, and agriculture. This leads to the dissolution of the habitat into little parts, which has an impact on how far migratory animals may travel.

(ii**) Over-exploitation**: Due to over-hunting and over-exploitation of various plants and animals by humans, many species have become endangered or extinct (such as the tiger and the passenger pigeon). (iii) Alien species Invasions: Accidental or intentional introduction of non-native species into a habitat has also led to the declination or extinction of indigenous species. For example, the Nile perch introduced in Lake Victoria in Kenya led to the extinction of more than two hundred species of native fish in the lake. (iv) Co−extinction: In a native habitat, one species is connected to the other in an intricate network. The extinction of one species causes the extinction of other species, which is associated with it in an obligatory way.

6. How is biodiversity important for ecosystem functioning?

Ans - 1. A particular ecosystem's stability, productivity, resilience, availability of alternate routes, and general health depend on its biodiversity.

2. David Tilman, a scientist, affirmed that greater biodiversity will increase ecosystem production since more plants are there to photosynthesize and more decomposers are present to recycle the ecosystem's waste. Additionally, he demonstrated that if a region has a high level of biodiversity, there will be less year-to-year variance in total biomass, which will contribute to the ecosystem's overall stability.

3. A diverse ecosystem offers resistance to both natural and man-made disruptions.

4. Paul Ehrlich suggested the River Popper hypothesis to explain the significance of abundant biodiversity on ecosystem function.

7. What are sacred groves? What is their role in conservation?

Ans - A sacred grove is a section of forest that has been planted close to a place of devotion. Rajasthan, the Western Ghats of Karnataka, Maharashtra, Meghalaya, and Madhya Pradesh are all home to sacred groves. Many rare, endangered, and indigenous plant and animal species that are found in a region are protected by sacred groves. Tribals in this area severely forbid the practise of deforestation. As a result, the sacred forest has a rich biodiversity.

8. Among the ecosystem services are control of floods and soil erosion. How is this achieved by the biotic components of the ecosystem?

Ans - Living things like plants and animals are included in the biotic components of an ecosystem. In order to prevent flooding and soil erosion, plants are crucial. The top layer of soil is shielded from wind and water erosion by the roots of plants, which keep soil particles together. Additionally, the roots open up the soil, letting ground water to seep in and reduce flooding. Thus, plants are able to stop soil erosion as well as natural disasters like floods and droughts. Additionally, they improve soil fertility and biodiversity.

9. The species diversity of plants (22 per cent) is much less than that of animals (72 per cent). What could be the explanations to how animals achieved greater diversification?

Ans - Species have diversified more than other animals for the reasons listed below:

1. Animals have a neurological system that allows them to take in stimuli and respond to them.

2. Animals can escape competition because they are mobile, which promotes greater diversification.

3. Compared to vegetation, animals are more resistant to seasonal changes.

Because plants are fixed, they need additional evolutionary adaptations to meet their needs for things like water, minerals, sunlight, and the avoidance of herbivores, among other things.

10. Can you think of a situation where we deliberately want to make a species extinct? How would you justify it?

Ans - Yes, it is possible to eradicate some dangerous pathogens, or disease-causing organisms, that play little to no part in the ecosystem.

Scientists are working hard to combat these microorganisms because they are dangerous to humans. Through the use of vaccinations, scientists have been able to eradicate the small pox virus from the planet. This demonstrates that people are actively trying to wipe out these species.