

CLASS-11

DATE- 15.01.22

GEOGRAPHY

Biodiversity and Conservation

Q 1 – What is biodiversity?

Ans. Biodiversity itself is a combination of two words, Bio (life) and diversity (variety). In simple words, biodiversity is the number and variety of organisms found within a specified geographic region. It refers to the varieties of plants, animals and micro-organisms, the genes they contain and the ecosystems they form. It relates to the variability among living organisms on the earth, including the variability within and between the species and that within and between the ecosystems.

Q 2 – What are the different levels of biodiversity?

Ans. Biodiversity itself is a combination of two words, Bio (life) and diversity (variety).

In simple words, biodiversity is the number and variety of organisms found within a specified geographic region. It is a result of hundreds of millions of years of evolutionary history. Biodiversity can be discussed at three levels:

Genetic diversity;

Species diversity;

Ecosystem diversity.

1. Genetic diversity: Genetic diversity refers to the variation of genes within species.
2. Species diversity: Species diversity refers to the variety of species. It relates to the number of species in a defined area. The diversity of species can be measured through its richness, abundance and types.
3. Ecosystem diversity: The broad differences between ecosystem types and the diversity of habitats and ecological processes occurring within each ecosystem type constitute the ecosystem diversity.

Q 3 – What do you understand by 'hotspots'?

Ans. Some areas are richer in species than others. Areas rich in species diversity are called hotspots of diversity. Hotspots are defined according to their vegetation. Plants are important because these determine the primary productivity of an ecosystem. Most, but not all, of the hotspots rely on species-rich ecosystems for food, firewood, cropland, and income from timber. In Madagascar, for example, about 85 per cent of the plants and animals are found nowhere else in the world.

Q 4 – Discuss briefly the importance of animals to human kind.

Ans. The earth, its ecosystems, and its creatures are all deeply connected. Thus, the existence of many species depends on the survival of others, and don't think human beings are an exception. As disconnected from nature as many of us humans have become, there are many animals we rely on for our benefit and wellbeing. Many animals actually help people just by performing their natural roles in their environment. And we're benefiting from their services for free.

Q 5 – What do you understand by 'exotic species'?

Ans. Species which are not the natural inhabitants of the local habitat but are introduced into the system, are called exotic species. There are many examples when a natural biotic community of the ecosystem suffered extensive damage because of the introduction of exotic species. During the last few decades, some animals like tigers, elephants, rhinoceros, crocodiles, minks and birds were hunted mercilessly by poachers for their horn, tusks, hides, etc. It has resulted in the rendering of certain types of organisms as endangered category.

Q 6 – What are the roles played by biodiversity in the shaping of nature?

Ans. Species of many kinds perform some function or the other in an ecosystem. Nothing in an ecosystem evolves and sustains without any reason. It implies that every organism, besides extracting its needs, also contributes something of useful to other organisms. Human beings contribute a great deal to the sustenance of ecosystems.

Species capture and store energy, produce and decompose organic materials, help to cycle water and nutrients throughout the ecosystem, fix atmospheric gases and help regulate the climate. These functions are important for ecosystem function and human survival.

The more diverse an ecosystem, better are the chances for the species to survive through adversities and attacks, and consequently, is more productive.

Hence, the loss of species would decrease the ability of the system to maintain itself. Just like a species with a high genetic diversity, an ecosystem with high biodiversity may have a greater chance of adapting to environmental change.

In other words, the more the variety of species in an ecosystem, the more stable the ecosystem is likely to be.

Q 7 – What do you know about the boundaries of the ecosystem?

Ans. An ecosystem is an area in which the inputs and outputs can be studied across its boundaries. It is only for convenience that it is considered as a separate entity. Otherwise, ecosystems are not strictly isolated. Their boundaries are indistinct and overlapping. Some movement always occurs in their materials. This movement may be from an adjacent or distinct ecosystem. For instance, a pond may be separated from an adjoining grassland, but some birds may break the barrier and feed on the fish and crabs of the pond. The movement of energy and material can be achieved by biological climate or geological processes.

Q 8 – What are the causes behind biodiversity?

Ans. Weathering mantle is the basis for the diversity of vegetation and thereby of the biodiversity. The basic cause for such weathering variations and resultant biodiversity is the input of solar energy and water.

Q 9 – Biodiversity is not evenly distributed over the earth. Explain.

Ans. Biodiversity is not found evenly on the earth. It is consistently richer in the tropics. As one approaches the polar regions, one finds larger and larger populations of fewer and fewer species.

Q 10 – Why is diversity necessary?

Ans. Diversity is essential for the development and prosperity of all living beings.

Q 11 – What is ecosystem diversity?

Ans. The broad differences between ecosystem types and the diversity of habitats and ecological processes occurring within each ecosystem type constitute the ecosystem diversity.

Q 12 – What is agro diversity?

Ans. An important aspect of biodiversity is crop diversity. It is also called agro diversity.

Q 13 – What are endangered species?

Ans. Endangered species include those species which are in danger of extinction. The IUCN publishes information about endangered species world-wide as the Red List of threatened species.

Q 14 – What are rare species?

Ans. Rare species are those species whose population is very small in the world. They are confined to limited areas or thinly scattered over a wider area.

Q 15 – What is mega diversity centre?

Ans. There are some countries which are situated in the tropical region; they possess a large number of the world's species diversity. They are called mega diversity centres.

Q 16 – Name the countries which have highest biodiversity.

Ans. There are 12 such countries, namely Mexico, Columbia, Ecuador, Peru, Brazil, Democratic Republic of Congo, Madagascar, China, India, Malaysia, Indonesia and Australia in which these centres are located.

Q 17 – What provisions have been made under Wild Life Protection Act, 1972?

Ans. The Wild Life Protection Act, 1972 provides for the protection of wild animals, birds and plants. This Act governs wildlife conservation and protection of endangered species by establishing national parks, wildlife sanctuaries and biosphere reserves.

Q 18 – Write about genetic biodiversity?

Ans. Genetic biodiversity refers to the variation of genes within species. Groups of individual organisms having certain similarities in their physical characteristics are called species. Genes are the basic building blocks of various life forms. Human beings genetically belong to the homo sapiens group and also differ in their characteristics such as height, colour, physical appearance, etc., considerably. This is due to diversity. This genetic diversity is essential for a healthy breeding of population of species.

Q 19 – Explain about economic importance of biodiversity.

Ans. For all humans, biodiversity is an important resource in their day-to-day life

Crop diversity: One important part of biodiversity is 'crop diversity', which is also called agro-biodiversity.

Manufacturing: Biodiversity is seen as a reservoir of resources to be drawn upon for the manufacture of food, pharmaceutical, and cosmetic products.

Economic commodities: At the same time, it is also the origin of new conflicts dealing with rules of division and appropriation of natural resources. Some of the important economic commodities that biodiversity supplies to humankind are: food crops, livestock, forests, fish, medicinal resources, etc.

Q 20 – Explain the role of ecosystem in biodiversity.

Ans. The broad differences between ecosystem types and the diversity of habitats and ecological processes occurring within each ecosystem type constitute the ecosystem diversity. The 'boundaries' of communities (associations of species) and ecosystems are not very rigidly defined. Thus, the demarcation of ecosystem boundaries is difficult and complex. We are also a part of ecosystems. This fact must be drawn upon every one of us so that we live and let other species also live their lives. It is our ethical responsibility to consider that each and every species along with us have an intrinsic right to exist. Hence, it is morally wrong to voluntarily cause the extinction of any species. The level of biodiversity is a good indicator of the state of our relationships with other living species. In fact, the concept of biodiversity is an integral part of many human cultures.

Q 21 – In how many categories has the International Union of Conservation of Nature and Natural Resources (IUCN) classified the threatened species of plants and animals?

Ans. The International Union of Conservation of Nature and Natural Resources (IUCN) has classified the threatened species of plants and animals into three categories for the purpose of their conservation.

Endangered species: Endangered species includes those species which are in danger of extinction. The IUCN publishes information about endangered species worldwide as the Red List of threatened species.

Vulnerable species: Vulnerable species includes the species which are likely to be in danger of extinction in near future if the factors threatening to their extinction continue. Survival of these species is not assured as their population has reduced greatly.

Rare species: Rare species are those species whose population is very small in the world. They are confined to limited areas or thinly scattered over a wider area

Q 22 – How do natural calamities and illegal hunting harm biodiversity?

Ans. Natural Calamities: Natural calamities such as earthquakes, floods, volcanic eruptions, forest fires, droughts, etc. cause damage to the flora and fauna of the earth, bringing change to the biodiversity of respective affected regions. Pesticides and other pollutants such as hydrocarbons and toxic heavy metals destroy the weak and sensitive species. Species which are not the natural inhabitants of the local habitat but are introduced into the system, are called exotic species. There are many examples when a natural biotic community of the ecosystem suffered extensive damage because of the introduction of exotic species. During the last few decades, some animals like tigers, elephants, rhinoceros, crocodiles, minks and birds were hunted mercilessly by poachers for their horn, tusks, hides, etc. It has resulted in the rendering of certain types of organisms as endangered category. Illegal Hunting: Hunting and habitat destruction contributed to a second wave of extinctions after European settlement, including:

16 land birds (nine species and seven subspecies).

One of three native bat species.

One fish.

At least 12 invertebrates, such as snails and insects.

Q 23 – Differentiate between extinct, endangered, vulnerable and rare species with examples.

Ans. The following terms are used to describe some species of plants and animals:

Extinct: A species is considered extinct if it has not been seen in the wild for at least fifty years.

Endangered: Species which are at a high risk of becoming extinct in the near future, if nothing is done to improve their situation.

Vulnerable: Species which are likely to become endangered within the next 25 years, if nothing is done to improve their situation.

Rare: Species which have small populations or only live in a small number of places, and could become vulnerable or endangered quite quickly.