

Chapter-15

Life on the Earth

Multiple choice questions.

Question 1(i).

Which one of the following is included in biosphere?

- (a) Only plants**
- (b) All living and non-living organisms**
- (c) Only animals**
- (d) All living organisms**

Answer:

- (b) All living and non-living**

Question 1(ii).

Tropical grasslands are also known as:

- (a) The prairies**
- (b) The savannas**
- (c) The steppes**
- (d) None of the above.**

Answer:

- (b) The savannas**

Question 1(iii).

Oxygen combines with iron found in the rocks to form:

- (a) Iron carbonate**
- (b) Iron nitrites**
- (c) Iron oxides**
- (d) Iron sulphate.**

Answer:

(e) Iron oxides

Question 1(iv).

During photosynthesis, carbon dioxide combines with water in the presence of sunlight to form:

- (a) Proteins
- (b) Amino acids
- (c) Carbohydrates
- (d) Vitamins.

Answer:

(c) Carbohydrates.

2. Answer the following questions in about 30 words.

Question 2(i).

What do you understand by the term 'ecology'?

Answer:

It is a scientific study of the interactions of organisms with their physical environment and with each other.

Question 2(ii).

What is an ecological system? Identify the major types of ecosystems in the world.

Answer:

The diversity of life-forms is maintained to bring a kind of balance. This balance is maintained in a particular proportion so that a healthy interaction between the biotic and the abiotic components goes on. The interactions of a particular group of organisms with abiotic factors within a particular habitat resulting in clearly defined energy flows and material cycles on land, water and air, are called ecological systems.

Ecosystems are of two major types: terrestrial and aquatic. Terrestrial ecosystem can be further be classified into 'biomes'. Aquatic ecosystems can be classed as marine and freshwater ecosystems.

Question 2(iii).

What is food-chain? Give one example of a grazing food-chain identifying the various levels.

Answer:

The sequence of eating and being eaten and the resultant transfer of energy from one level to another is known as the food chain. There are two types of food chain, grazing food chain and detritus food chain.

1. In a grazing food chain, the first level starts with plants as producers and ends with carnivores as consumers at last level, with the herbivores being at the intermediate level. A capture initiated by grazing detritus food chain is based on autotrophs energy capture initiated by grazing animals and involves the decomposition or breaking down of organic wastes and death matter derived from the grazing food chain. For example plant- beetle- paddy stalk-frog-snake-hawk

2. A detritus food-chain is based on autotrophs energy capture initiated by grazing animals and involves the decomposition or breaking down of organic wastes and dead matter derived from the grazing food-chain.

Question 2(iv).

What do you understand by the term 'food web'? Give examples.

Answer:

The interconnecting network of species is known as food web. A mouse feeding on grain may be eaten by different secondary consumers (carnivores) and these carnivores may be eaten by other different tertiary consumers (top carnivores). In such situations, each of the carnivores may consume more than one type of prey. As a result, the food- chains get interlocked with one another.

Question 2(v).

What is a biome?

Answer:

A biome is a plant and animal community that covers a large geographical area. The boundaries of different biomes on land are determined mainly by climate. Therefore, a biome can be defined as the total assemblage of plant and animal species interacting within specific conditions. These include rainfall, temperature, humidity and soil conditions. Some of the major biomes of the world are: forest, grassland, desert and tundra biomes.

3. Answer the following questions in about 150 words.

Question 3(i).

What are biogeochemical cycles? Explain how nitrogen is fixed in the atmosphere.

Answer:

The sun is the source of all energy on earth. This energy initiates life processes in the biosphere through photosynthesis, the main source of food and energy for green plants. A very small fraction of about 0.1 percent of solar energy reaching earth is fixed in photosynthesis. More than half is used for plant respiration and the remaining part is temporarily stored or is shifted to other portions of the plant. During photosynthesis carbon dioxide is converted into organic compounds and oxygen.

The balance of the chemical elements is maintained by a cyclic passage through the tissues of plants and animals. The cycle starts by absorbing the chemical elements by the organism and is returned to the air, water and soil through decomposition. These cyclic movement of chemical elements of the biosphere between the organism and the environment are referred to as bio-geochemical cycles.

Fixing of nitrogen in the atmosphere Action of soil micro-organisms and associated plant roots on atmospheric nitrogen found in pore spaces of the soil comprise the principal source of free nitrogen. Lighting and cosmic radiation can also fix nitrogen in the atmosphere.

Question 3(ii).

What is an ecological balance? Discuss the important measures needed to prevent ecological imbalances.

Answer:

Ecological balance is a state of dynamic equilibrium within a community of organisms in a habitat or ecosystem. It can happen when the diversity of the living organisms remains relatively stable. Gradual changes do take place but that happens only through natural succession. It can also be explained as a stable balance in the numbers of each species in an ecosystem. This occurs through competition and cooperation between different organisms where population remains stable.

This balance is brought about by the fact that certain species compete with one another determined by the environment in which they grow. This balance is also attained by the fact that some species depend on others for their food and sustenance. Such accounts are encountered in vast grasslands where the herbivorous animals (deer, zebras, buffaloes, etc.) are found in plenty.

Ecological balance may be disturbed due to the introduction of new species, natural hazards or human causes. Human interference has affected the balance of plant communities leading to disturbances in the ecosystems. Such disturbances bring about numerous secondary successions. Human pressure on the earth's resources has put a heavy toll on the ecosystem. This has destroyed its originality and has caused adverse effects to the general environment. Ecological imbalances have brought many natural calamities like floods, landslides, diseases, erratic climatic occurrences, etc. There is a very close relationship between the plant and animal communities within particular habitats. Diversity of life in a particular area can be employed as an indicator of the habitat factor. Proper knowledge and understanding of such factors provide a strong base for protecting and conserving the ecosystems.

