

Board –CBSE

Class –10<sup>th</sup>

Topic – Our Environment

1. Why bacteria and fungi are called decomposers? List any two advantages of decomposers to the environment.

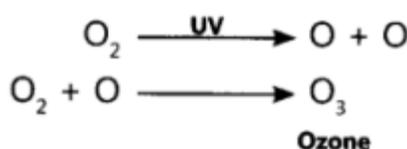
**Ans.** Bacteria and fungi break down the dead remains and waste products of organisms. These microorganisms are called decomposers as they break down the complex organic substances into simple inorganic substances that go into the soil and are used up once more by the plants.

Two advantages of decomposers to the environment are as follows:

- 1) Decomposers feed, on the dead bodies of plants and animals. They return the simple components to soil and help in making the steady-state of the ecosystem by recycling nutrients. They, therefore, create a balance in the environment.
- 2) They also act as scavengers or cleansing agents of the atmosphere.

2. How is ozone formed in the upper atmosphere? Why is the damage to the ozone layer a cause of concern to us? State a cause of this damage.

**Ans.** Ozone is formed in the upper atmosphere by the reaction of ultraviolet (UV) radiation on oxygen (O<sub>2</sub>) molecules. The damage to the ozone layer is a cause of concern to us as due to its damage, more ultraviolet rays reach the earth's surface causing various health hazards.



A cause of this damage is the presence of a large amount of chlorofluorocarbons in the atmosphere.

3. What are biodegradable and non-biodegradable substances? Select two biodegradable pollutants from the following: Agricultural waste, glass, plastic, sewage, DDT.

**Ans.** Biodegradable substances are those substances that are broken down into simpler, harmless substances in nature in due course of time by biological processes such as micro-organisms like certain bacteria.

Non-biodegradable substances are those substances that cannot be broken down into simpler, harmless substances in nature.

Two biodegradable pollutants are agricultural waste and sewage.

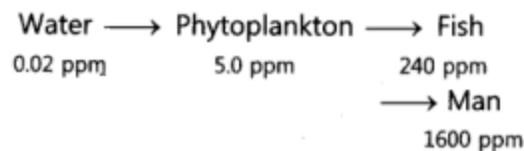
**4.** Explain the phenomenon of “biological magnification” How does it affect organisms belonging to different trophic levels particularly the tertiary consumers?

**Ans.** The process in which harmful chemicals enter a food chain and get accumulated progressively at each trophic level is called biological magnification.

Harmful and toxic chemicals enter our bodies when they are added to soil and water. The use of pesticides to protect the food crops from diseases and pests and chemical wastes of factories are dumped in open or disposed of into rivers. These chemicals are washed down into the soil and ultimately to the water table or get absorbed or taken up from the soil by the plants along with water and minerals and in this way harmful chemicals enter the food chain. The quantity of these harmful chemicals increases with an increase in the trophic level of the food chain because these substances are not degradable. Man is at the top of the food chain, so concentration is maximum in human beings.

Thus, the accumulation of DDT has been maximum in man as DDT is used to destroy pests. DDT is accumulated in the following way in this food chain:

This is the reason why our food grains such as wheat and rice, vegetables and fruits, and even meat contain varying amounts of pesticides residues. So, the highest trophic level at the extreme right of the food chain has the maximum concentration of harmful chemicals in a food chain.



**5.** “Damage to the ozone layer is a cause for concern.” Justify this statement. Suggest any two steps to limit this damage.

**Ans.** The ozone layer prevents harmful ultraviolet radiation to enter the atmosphere and reach the earth’s surface. Depletion of the ozone layer has become a cause for concern because it can cause serious effects on the human body and other organisms of the environment like fatal diseases such as skin cancer, changes in genetic material DNA, eye damage, etc.

Two steps to limit this damage are as follows:

1. Judicious use of aerosol sprays propellants such as fluorocarbon and chlorofluorocarbons which cause depletion or hole in the ozone layer.
2. Control over large-scale nuclear explosions and limited use of supersonic planes.

**6.** What will happen if we kill all the organisms at one trophic level?

**Ans.** If we kill all the organisms at one trophic level, the following effects will take place:

1. The population of organisms in previous trophic levels will increase.
2. The organisms in the next trophic level will not be able to get the food, so they will migrate to some other ecosystem or die.
3. It will cause an ecological imbalance in the food chain.

**7.** What is meant by biodegradable waste?

**Ans.** Biodegradable wastes are those substances that are broken down into simpler, harmless substances in nature in due course of time by biological processes such as the action of micro-organisms like certain bacteria.

Examples: Urine and faecal matter, sewage, agricultural residue, paper, wood, cloth, and cattle dung.

**8.** What are the various steps in a food chain called?

**Ans.** The various steps in a food chain are called trophic levels.

**9.** What is the important function of the presence of ozone in the earth's atmosphere?

**Ans.** The important function of the presence of ozone in the earth's atmosphere is that it shields the surface of the earth from ultraviolet (UV) radiations of the sun.

**10.** Give an example to illustrate that indiscriminate use of pesticides may result in the degradation of the environment.

**Ans.** The pesticides used in crop fields are washed down into the water bodies. From water bodies, these are absorbed by aquatic plants and animals of a food chain and thereby degrade the environment.

**11.** Why is it necessary to conserve our environment?

**Ans.** It is necessary to conserve our environment to prevent depletion of natural resources and environmental damage, thereby sustaining life.

**12.** What is meant by biodegradable waste?

**Ans.** Biodegradable wastes are those substances that are broken down into simpler, harmless substances in nature in due course of time by biological processes such as the action of microorganisms like certain bacteria. Examples: Urine and fecal matter, sewage, agricultural residue, paper, wood, cloth, and cattle dung.

**13.** What is the role of decomposers in the ecosystem?

**Ans.** Role of decomposers in the environment:

- a) They return the nutrients to the nutrient pool.
- b) They help in completing the different biogeochemical cycles, thus they maintain the balance in the ecosystem.

**14.** What step is being taken to limit the damage to the ozone layer?

- Ans.** (a) Judicious use of aerosol spray propellants such as fluorocarbon and chlorofluorocarbons which cause depletion or hole in the ozone layer.
- (b) Control over large-scale nuclear explosions and limited use of supersonic planes.

**15.** Why are some substances non-biodegradable?

**Ans.** Some substances are non-biodegradable because they cannot be broken down into simpler harmless substances in nature.

**16.** Which class of chemicals is linked to the decrease in the amount of ozone in the upper atmosphere of the earth?

**Ans.** The chemical compound Chlorofluorocarbon is responsible for the decrease of ozone in the upper atmosphere of the earth.

**17.** Name two decomposers operating in our ecosystem.

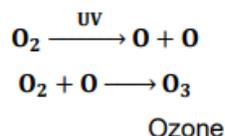
**Ans.** Bacteria and fungi.

18. Select two non-biodegradable substances from the following waste generated in a kitchen: spoilt food, paper bags, milk bags, vegetable peels, tin cans, used tea leaves.

**Ans.** Milk bags and tin cans.

19. What happens when higher energy ultraviolet radiations act on the oxygen at the higher level of the atmosphere?

**Ans.** When high energy ultraviolet radiations act on oxygen, ozone is produced:



20. In a food chain, 10,000 joules of energy are absorbed by the producer. How much energy will be available to the secondary consumer to transfer it to the tertiary consumer?

**Ans.** 10 J is available to the tertiary consumer because plants absorb 1% of total sunlight and then 10% of energy is transferred to each trophic level.

21. List two man-made ecosystems.

**Ans.** Garden and Pond are man-made ecosystems.

22. Consider the following food chain which occurs in a forest: Grass → Deer → Lion. If 10,000 J of solar energy is available to the grass, how much energy would be available to the deer to transfer it to the lion?

**Ans.** 10 J energy would be available to deer to transfer to the lion.

23. Which of the following belong to the first trophic level of a food chain? Grass, Grasshopper, Plants, Rat, Tiger.

**Ans.** Grass and plants belong to the 1st trophic level of a food chain.

24. Name the phenomenon in which non-biodegradable chemicals get accumulated progressively at each trophic level of a food chain.

**Ans.** Biological magnification

