

Questions

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1. What are trophic levels? Give an example of a food chain and state the different trophic levels in it.

Solution:

In food chain, the transfer of food or energy takes place at the various levels and these levels are known as trophic levels.

Example:

Grass → Goat → Man

In food chain,

- Grass represents the first trophic level
- Goat represents the second trophic level
- Man represents the third trophic level

2. What is the role of decomposers in the ecosystem?

Solution:

Following is the role of a decomposer in the ecosystem:

- They act as cleansing agents of the environment by decomposing the dead plants and animals
- They help in recycling the nutrients
- They provide space for new being in the biosphere by decomposing the dead
- They help in putting back the various elements into water, soil and air for the reuse of producers like crop plants.

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1. Why are some substances biodegradable and some non-biodegradable?

Solution:

The reason why some substances are biodegradable and some non-biodegradable is because the microorganisms like bacteria and decomposers like saprophytes have a specific role to play. They can breakdown only natural products like paper, wood etc. but they cannot breakdown man-made products like plastics. Based on this some substances are biodegradable and some non-biodegradable.

2. Give any two ways in which biodegradable substance would affect the environment.

Solution:

Following are the ways in which biodegradable substance would affect the environment:

- They keep the environment clean as they are easily decomposed.
- They can easily go through the geo-chemical cycle with the help of decomposers.

3. Give any two ways in which non-biodegradable substance would affect the environment.

Solution:

Following are the ways in which non-biodegradable substance would affect the environment:

- They cause air, soil and water pollution.
- They may cause bio-magnification in the food chain resulting in end of human.

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1. What is ozone and how does it affect the ecosystem?

Solution:

Ozone is a molecule formed by the three atoms of oxygen and is known as an isotope of oxygen. The main function of ozone layer is to provide protection to the earth's surface from the harmful UV rays of the sun. These rays are harmful to living organisms and may result in skin cancer.

2. How can you help in reducing the problem of waste disposal? Give any two methods.

Solution:

Following are the ways to reduce the problem of waste disposal:

- (a) 3 R's: By following the 3 R's one can reduce the problem of waste disposal. The 3 R's are reduce, recycle and reuse. Reducing the usage of own vehicles and opting for public transport can reduce the air pollution. Recycling and reusing of plastics is also a way to reduce the waste disposal.
- (b) Preparation of compost: All the biodegradable wastes like kitchen waste, can be dumped in the compost.

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1. Which of the following groups contain only biodegradable items?

- a) Grass, flowers and leather
- b) Grass, wood and plastic
- c) Fruit peels, cake and lime juice
- d) Cake, wood and grass

Solution:

- a) Grass, flowers and leather c) Fruit peels, cake and lime juice d) Cake, wood and grass

Above all are the groups that contain only biodegradable items. Since plastic is not a biodegradable substance, that group cannot be considered as a biodegradable.

2. Which of the following constitute a food-chain?

- a) Grass, wheat and mango
- b) Grass, goat and human
- c) Goat, cow and elephant
- d) Grass, fish and goat

Solution:

- b) Grass, goat and human

Here, grass is the producer, goat is the primary consumer and human is the secondary consumer.

3. Which of the following are environment-friendly practices?

- a) Carrying cloth bags to put purchases in while shopping
- b) Switching off unnecessary lights and fans
- c) Walking to school instead of getting your mother to drop you on her scooter
- d) All of the above

Solution:

All of the above

4. What will happen if we kill all the organisms in one trophic level?

Solution:

If we kill all the organisms in one trophic level, the food supply to the next level will stop resulting in

imbalance of the ecosystem. As a result animals in the higher levels will die making the growth of animals in lower trophic level increase in an enormous way. All of this will affect the overall balance in the ecosystem.

5. Will the impact of removing all the organisms in trophic level be different for different trophic levels? Can the organisms of any trophic level be removed without causing any damage to the ecosystem?

Solution:

Yes, the impact of removing all the organisms in a trophic level will be different for different trophic levels. For example, if all the producers are removed, there is a chance of death or migration of the primary consumers which will upset the trophic levels. This is same for all the levels. Therefore, removal of organisms at any level would upset the whole ecosystem as the food chain is disturbed. The survival of the higher level animals is completely dependent on the animals at the lower levels.

6. What is biological magnification? Will the levels of this magnification be different at different levels of the ecosystem?

Solution:

Biological magnification can be defined as the progressive increase in the concentration of non-biodegradable wastes in the food chain. As there is an increase in the magnification at the primary level of the ecosystems, all the other levels do get affected and the concentration may vary when compared to first level.

7. What are the problems caused by the non-biodegradable wastes that we generate?

Solution:

Following are the problems caused by the non-biodegradable wastes:

- These substances cannot be decomposed by the microorganisms.
- As the quantity increases, dumping becomes a problem.
- Non-biodegradable wastes like heavy metals may enter the food chain in the upper trophic levels.
- They may escape to the ground water which causes soil infertility and disturbance in pH of the soil.

8. If all the waste we generate is biodegradable, will this have no impact on the environment?

Solution:

Biodegradable wastes are decomposed by the microorganisms into simpler substances which can be used by the producers as a raw material. But following are the effects of too much of biodegradable wastes:

- As the decomposition of the biodegradable wastes are slow, they produce awful smell and when inhaled by humans it can be harmful.
- The dumping areas can be a place where harmful organisms may start to breed which can be harmful to humans as well as plants and animals.
- Increase in the number of aquatic organisms may result in depletion of oxygen.

9. Why is damage to the ozone layer a cause for concern? What steps are being taken to limit this damage?

Solution:

Ozone layer is a protective cover for the earth. It prevents harmful UV rays from entering the earth as these rays harmful and can result in skin cancer. But the air pollutants like chlorofluorocarbons (CFCs) are the main reason for the depletion of the ozone layer. Too much of UV rays are harmful for plants as they affect the photosynthesis, destroy planktons and decomposers. These are the reasons why damage of ozone layer a cause of concern.

Steps taken to limit is many developing and developed countries have signed and are obeying the directions of TINEP (United Nations Environment Programme) to freeze or limit the production and usage of CFCs.