

Chapter-13

Our Environment

2 MARKS QUESTIONS

1. Give any two ways in which biodegradable substances would affect the environment.

Answer:

Two ways within which perishable substances would have an effect on the atmosphere area unit -

- Biodegradable waste is a substance that can be broken down easily and naturally by natural sources like water, oxygen, sun radiation, or microorganisms.
- Biodegradable waste produces a foul smell and that's why they result in pollution.

2. Give any two ways in which non-biodegradable substances would affect the environment.

Answer:

Non-biodegradable substances affect the environment in the following ways:

- They contaminate soil and water resources as they can't be rotten by microorganisms.
- These substances, if accidentally eaten by stray animals, will damage them and might even cause their death.

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

Answer:

A trophic level is the steps in a food chain.

Consider the following scenario:

For example:

Grass - Trophic level I

Grasshopper - Trophic level II

Frog - Trophic level III

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

Answer:

Decomposers eat decomposing and dead materials. They contribute to the clean-up of the environment.

5. What is ozone and how does it affect any ecosystem?

Answer:

Oxygen in the form of ozone is a type of oxygen. Ozone's molecular formula is O_3 . In the atmosphere, it can be found in higher concentrations. It blocks the sun's damaging ultraviolet radiation from reaching the earth. UV rays have been linked to skin cancer, cataracts, and the extinction of plant and animal life.

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

Answer:

The following methods can be taken to alleviate the trash disposal issue:

- a. Reduce, reuse, and recycle as much as possible.
- b. Use smart waste disposal techniques such as separate trash cans for different types of waste.

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

Answer: I

f we kill all the organisms in one trophic level, the transfer of energy to the next level will stop.

It'll lead to overpopulation at one level. This would disturb the food chain and cause the collapse of the ecosystem.

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

Solution :

It will have only short term impact on environment, the action of decomposers will slow down and some air/water pollution will be caused. However, in longer term, there will be no impact of biodegradable wastes on the environment.

4 MARKS QUESTIONS

1. Give any two ways in which biodegradable substances would affect the environment.

Solution:

The following are the ways in which biodegradable substances would affect the environment:

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

2. Give any two ways in which non-biodegradable substances would affect the environment.

Solution:

The following are the ways in which non-biodegradable substances would affect the environment:

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

3. 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 the 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.

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

Solution:

The following are the ways to reduce the problem of waste disposal:

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

5. What will happen if we kill all the organisms at 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 an imbalance of the ecosystem. As a result, animals in the higher levels will die, making the growth of animals in the lower trophic level increase in an enormous way. All of this will affect the overall balance in the ecosystem.

6. Will the impact of removing all the organisms in the 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 the same for all levels. Therefore, the 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.

7. 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 successive trophic levels of the ecosystems, all the other levels do get affected, and the concentration may vary when compared to the first level.

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

Solution:

The following are the problems caused by non-biodegradable wastes:

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

9. 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 raw materials. But the following are the effects of too many biodegradable wastes:

- As the decomposition of biodegradable wastes is slow, they produce an 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.
- An increase in the number of aquatic organisms may result in the depletion of oxygen.

7 MARKS QUESTIONS

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

Solution:

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

Example:

Grass → Goat → Man

In the food chain,

- Grass represents the first trophic level.
- The goat represents the second trophic level.
- Man represents the third trophic level.

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

Solution:

The following are the roles of decomposers in the ecosystem:

- They act as a cleansing agent of the environment by decomposing dead plants and animals.
- They help in recycling nutrients.
- They provide space for new beings 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.

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

Solution:

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

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

5. Will the impact of removing all the organisms in the 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 the same for all levels. Therefore, the 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.

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- As the decomposition of biodegradable wastes is slow, they produce an 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.
- An increase in the number of aquatic organisms may result in the depletion of oxygen.

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

Solution:

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

As a step to limit this, many developing and developed countries have signed and are obeying the directions of UNEP (United Nations Environment Programme) to freeze or limit the production and usage of CFCs.

MULTIPLE CHOICE QUESTIONS

1) The decomposers in an ecosystem:

- a) Convert organic material to inorganic forms
- b) Convert inorganic material to simpler forms
- c) Convert inorganic material into the organic compound
- d) Do not break down the organic compound

Correct Answer: Option (a)

2) Some waste products are listed below:

- Grass Cutting
- Polythene Bag
- Plastic Toys
- Used Tea Bags
- Old Clothes
- Paper Straw

Which group of waste materials can be classified as non-biodegradable?

- a) Plant waste, used tea bags
- b) Polyethene bags, plastic toys
- c) Used tea bags, paper straw
- d) Old clothes, broken footwear

Correct Answer: Option (b)

3) Which statement shows the interaction of an abiotic component with a biotic component in an ecosystem?

- a) A grasshopper feeding on a leaf
- b) Rainwater running down into the lake
- c) An earthworm making a burrow in the soil
- d) A mouse fighting with another mouse for food

Correct Answer: Option (c)

4) Which of the following are environment-friendly practices?

- a) Carrying a cloth bag to put purchases 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

Correct Answer: Option (d)

5) The amount of energy that flows from one trophic level to another in a food chain is

- a) 5%
- b) 10 %
- c) 20 %
- d) 15 %

Correct Answer: Option (b)

6) The manufacturing of Chlorofluorocarbons free refrigerators is mandatory throughout the world. How does this help prevent ozone depletion?

- a) This will help convert oxygen molecules into ozone
- b) This will help convert the CFCs into ozone molecules
- c) This will reduce the production of CFCs from oxygen molecules
- d) This will reduce the release of CFCs that reacts with ozone molecules

Correct Answer: Option (d)

7) The primary consumers are

- a) Carnivores
- b) Herbivores
- c) Omnivores
- d) Producers

Correct Answer: Option (b)

8) Which of the following is responsible for the depletion of the ozone layer

- a) CFCs
- b) Oxygen
- c) SO₂
- d) CO₂

Correct Answer: Option (a)

9) Ozone forms by the combination of free oxygen atoms and oxygen molecules. How do free oxygen atoms form at higher levels of the atmosphere?

- a) By splitting molecular oxygen into free oxygen atoms in the presence of low-energy UV radiations
- b) By splitting molecular oxygen into free oxygen atoms in the presence of high-energy UV radiations
- c) By the combination of two molecular oxygen in the presence of high energy UV radiations
- d) By the combination of two free oxygen atoms in the presence of lower energy UV radiations

Correct Answer: Option (b)

10) The driving force of any ecosystem is

- a) Carbohydrates
- b) Solar energy
- c) Biomass
- d) ATP

Correct Answer: Option (b)

FILL IN THE BLANKS

1.The layer of gases surrounding the Earth is known as the _____.

Answer: atmosphere

2.The process by which green plants use sunlight to synthesize food from carbon dioxide and water is called _____.

Answer: photosynthesis

3.The gradual increase in the Earth's average temperature due to human activities is referred to as _____ warming.

Answer: global

4.The ozone layer is found in the _____ layer of the atmosphere.

Answer: stratosphere

5.The loss of a species from a particular habitat or the entire planet is known as _____.

Answer: extinction

6.The study of the interactions between living organisms and their environment is called _____.

Answer: ecology

7.The three Rs - Reduce, Reuse, and _____ - promote sustainable resource management.

Answer: Recycle

8.The process of breaking down waste materials into simpler substances by microorganisms is called _____.

Answer: decomposition

9.The primary greenhouse gas responsible for trapping heat in the Earth's atmosphere is _____.

Answer: carbon dioxide

10.The term used to describe the variety of life on Earth, including the variety within species, between species, and of ecosystems, is _____.

Answer: biodiversity