

Our Environment

TOPIC COVERED

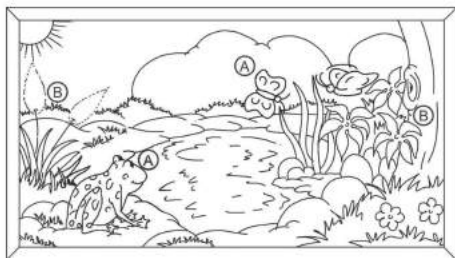
Eco-System – What are its Components?



Multiple Choice Questions

1 Mark

1.



An ecosystem is represented in the figure given above. This ecosystem will be self-sustaining if

- (a) the type of organisms represented by B are eliminated.
 - (b) materials cycle between the organisms labelled A and the organisms labelled B.
 - (c) the organisms labelled A outnumber the organisms labelled B.
 - (d) the organisms labelled A are equal in number to the organisms labelled B.
2. In an ecosystem, herbivores represent
- (a) producers
 - (b) primary consumers
 - (c) secondary consumers
 - (d) decomposers
3. Trophic level in an ecosystem represents
- (a) oxygen level
 - (b) water level
 - (c) energy level
 - (d) salt level
4. A food chain comprises of birds, green plants, fish and man.
The concentration of harmful chemical entering the food chain will be maximum in
- (a) green plants
 - (b) man
 - (c) birds
 - (d) fish
5. First link in any food chain is usually green plants because
- (a) they are widely distributed
 - (b) they are fixed at one place in the soil
 - (c) they alone have the capacity to synthesise food using sunlight
 - (d) there are more herbivores than carnivores
6. Which of the following statements about food chain and energy flow through ecosystem is false?

- (a) Food webs include two or more food chains.
- (b) All organisms that are not producers are consumers.
- (c) A single organism can feed at several trophic levels.
- (d) Detritivores feed at all trophic levels except the producer level.

7. Which of the following is a logical sequence of food chain?

- (a) Producer → consumer → decomposer
- (b) Producer → decomposer → consumer
- (c) Consumer → producer → decomposer
- (d) Decomposer → producer → consumer

8. Which of the following is an autotroph?

- (a) Lion
- (b) Insect
- (c) Tree
- (d) Mushroom

9. In the garden ecosystem, which of the following are producers?

- (a) Insects
- (b) Snakes
- (c) Grasses
- (d) Rabbits

10. In an ecosystem 10% of energy available for transfer from one trophic level to the next is in the form of:

[CBSE 2020]

- (a) heat energy
- (b) chemical energy
- (c) mechanical energy
- (d) light energy

11. Soil fertility is determined by its ability to:

[CBSE 2020]

- (a) Decay organic matter
- (b) Hold organic matter
- (c) Hold water
- (d) Support life

12. Which statement shows interaction of an abiotic component with a biotic component in an ecosystem?

[CBSE T.E.R.M.*]

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

Answers

- 1. (b)
- 2. (b) Herbivores are primary consumers.
- 3. (c)
- 4. (b) It is due to biological magnification.
- 5. (c)

6. (d)
7. (a)
8. (c) Green plants are autotrophs.
9. (c) Grasses are the producers.
10. (b) The autotrophs capture the energy present in sunlight and convert it into chemical energy. Only 10% of this energy is passed on to next trophic level.
11. (d)
12. (c)



Very Short Answer Type Questions 2 Marks



13. What is an ecosystem? Give one example each of (i) natural, and (ii) man-made ecosystem.

[CBSE 2021 (C)]

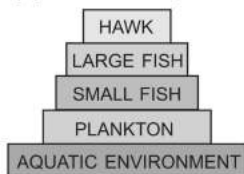
Ans. All organisms such as plants, animals, microorganisms and human beings as well as the physical surroundings interact with each other and maintain a balance in nature.

All the interacting organisms together with the non-living constituents of the environment form as ecosystem.

Examples of—

- (i) Natural ecosystem — Pond, forest
- (ii) Artificial or man-made ecosystem — Crop field, aquarium.

14. DDT was sprayed in a lake to regulate breeding of mosquitoes. How would it affect the trophic levels in the following food chain associated with a lake? Justify your answer. [CBSE Sample Paper 2022]



- Ans. • DDT being a non-biodegradable pesticide will enter the food chain from the first trophic level i.e Plankton. (½ Mark)
- Non-biodegradable pesticides accumulate progressively at each trophic level. This phenomenon is known as biological magnification. (1 Mark)
 - HAWK will have the highest level of pesticide. (½ Mark) [CBSE Marking Scheme]

15. With the help of an example explain that a garden is an ecosystem.

Ans. A garden comprises of different kind of flora and fauna such as grasses, flowering and non-flowering plants, trees, frogs, insects, birds, etc. All these living organisms depend and interact with each other and their growth, reproduction and other vital biological

activities depend upon the abiotic component comprising of physical factors like temperature, rainfall, wind, soil and minerals. Therefore, we can say that a garden is an ecosystem.

16. In the following food chain, only 2 J of energy was available to the peacocks. How much energy would have been present in grass? Justify your answer. GRASS → GRASS HOPPER → FROG → SNAKE → PEACOCK [CBSE 2022]

Ans. In the given food chain

GRASS → GRASS HOPPER → FROG → SNAKE → PEACOCK

2 J of energy was available. In a food chain, there is a loss of energy and only 10 percent of the energy available at each trophic level is passed on to the next trophic level.

Let energy present in Grass (first trophic level) = A J
Energy present in Grasshopper (second trophic level)

$$= A \times \frac{10}{100} = \frac{A}{10} \text{ J}$$

Energy present in Frog (third trophic level)

$$= \frac{A}{10} \times \frac{10}{100} = \frac{A}{100} \text{ J}$$

Energy present in Snake (fourth trophic level)

$$= \frac{A}{100} \times \frac{10}{100} = \frac{A}{1000} \text{ J}$$

Energy present in Peacock (fifth trophic level)

$$= \frac{A}{1000} \times \frac{10}{100} = \frac{A}{10,000} \text{ J}$$

$$2 \text{ J} = \frac{A}{10,000}$$

$$\therefore A = 20,000 \text{ J}$$

Energy present in grass is 20,000 J

17. (a) List two natural ecosystems.
- (b) List two biotic components of a biosphere.

[Delhi 2016]

Ans. (a) Two natural ecosystems are forest and river.
(b) Two biotic components of a biosphere are plants and animals.

18. (a) When plants are eaten by primary consumers, a great deal of energy is lost as heat to the environment and some amount goes in carrying out various life processes. State the average percentage of energy lost in this manner. [HOTS]
- (b) What happens to Sun's energy that fall on green plants?

Ans. (a) The average percentage of energy lost when plants are eaten by primary consumers is 90 %.
(b) Green plants absorb 1% of Sun's energy that falls on their leaves.

19. (a) What will be the amount of energy available to the organism of the 2nd trophic level of a food chain, if the energy available at the first trophic level is 10,000 Joules?

- (b) **The first trophic level in a food chain is always a green plant. Why?** [AI 2015]

Ans. (a) 1,000 Joules of energy will be available to the organism of the 2nd trophic level.

- (b) Only green plants can make their own food from sunlight. Green plants therefore, always occupy the 1st trophic level in a food chain.

20. (a) **Which of the following are always at the second trophic level of the food chains?** [AI 2015]

Carnivores, Autotrophs, Herbivores

- (b) **The following organisms form a food chain. Which of these will have the highest concentration of non-biodegradable chemicals? Name the phenomenon associated with it.**

[Foreign 2015]

Insects, Hawk, Grass, Snake, Frog.

Ans. (a) Herbivores are always at the 2nd trophic level.

- (b) Hawk will have highest concentration of non-biodegradable chemicals. The phenomenon is called biological magnification.



Short Answer Type Question

3 Marks



21. **What are consumers? Name the four categories under which the consumers are further classified.**

[CBSE 2021 (C)]

Ans. The organisms which cannot manufacture their own food and depend on plants and other animals for their food.

There are four categories under which the consumers are further classified are:

- (i) Herbivores (ii) Carnivores
(iii) Omnivores (iv) Decomposers

22. **What is an ecosystem? List its two main components. We do not clean natural ponds or lakes but an aquarium needs to be cleaned regularly. Why is it so? Explain.** [AI 2015]

Ans. Ecosystem: It is the structural and functional unit of biosphere, comprising of all the interacting organisms in an area together with the non-living constituents of the environment. Thus, an ecosystem is a self-sustaining system where energy and matter are exchanged between living and non-living components.

Main components of ecosystem:

Biotic Component: It means the living organisms of the environment—plants, animals, human beings and microorganisms like bacteria and fungi, which are distinguished on the basis of their nutritional relationship.

Abiotic Component: It means the non-living part of the environment—air, water, soil and minerals. The climatic or physical factors such as sunlight, temperature, rainfall, humidity, pressure and wind are a part of the abiotic environment.

An **aquarium** is an artificial and incomplete ecosystem compared to ponds or lakes which are natural, self-sustaining and complete ecosystems where there is a perfect recycling of materials. An aquarium therefore needs regular cleaning.

23. **“Energy flow in food chains is always unidirectional.” Justify this statement. Explain how the pesticides enter a food chain and subsequently get into our body.** [Foreign 2015]

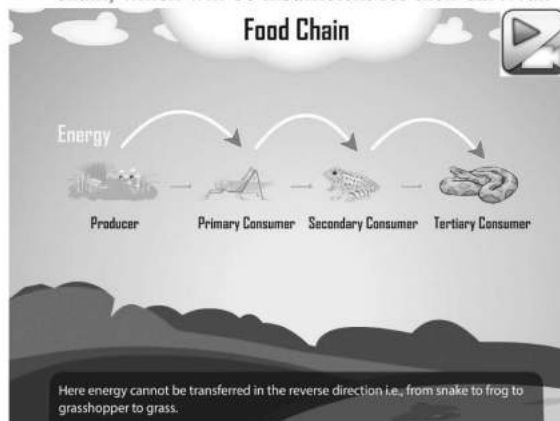
Ans. The energy flow through different steps in the food chain is unidirectional. The energy captured by autotrophs does not revert back to the solar input and it passes to the herbivores, i.e. it moves progressively through various trophic levels. Thus energy flow from sun through producers to omnivores is in single direction only.

Pesticides are sprayed to kill pests on food plants. The food plants are eaten by herbivores and alongwith the food, pesticides are also eaten by the herbivores. Herbivores are eaten by carnivores and alongwith the herbivore animal, pesticide also enters the body of the carnivore. Man eat both plants and animals and pesticide alongwith food enters the body of human. Concentration of pesticides increases as we move upward in the food chain and the process is called biological magnification.

24. **What is meant by food chain? “The number of trophic levels in a food chain is limited.” Give reason to justify this statement.** [Foreign 2014]

Ans. The series of organisms that take part at various biotic levels form a food chain.

At each trophic level in a food chain, a large portion of the energy is utilised for the maintenance of organisms which occur at that trophic level and energy is lost as heat. As a result of this, organisms in each trophic level pass on less energy to the next trophic levels, than they receive. The longer the food chain, the less is the energy available to the final member of the food chain, which will be insufficient for their survival.



25. Your mother always thought that fruit juices are very healthy for everyone. One day she read in the newspaper that some brands of fruit juices in the market have been found to contain certain level of pesticides in them. She got worried as pesticides are injurious to our health.

(a) How would you explain to your mother about fruit juices getting contaminated with pesticides?

(b) It is said that when these harmful pesticides enter our body as well as in the bodies of other organisms they get accumulated and beyond a limit cause harm and damage to our organs. Name the phenomenon and write about it.

[Foreign 2017]

- Ans. (a) • Pesticides are the chemicals used to protect our crops from diseases and pests.
• Pesticides stick to the surface of the point and in juice are made without proper washing pesticide will also go into the juice.
• These pesticides also get added down to underground water and are absorbed by plants. The pesticides then enter into the system of the plants including the points when juice are made from sick fruits to juice also contains pesticides.
- (b) • The phenomenon is called biological magnification. It is the phenomenon in which certain harmful chemicals enter the food chain and get accumulated and increase in concentration at successive trophic levels.
• It is because they are not degradable.
• The maximum concentration of these chemicals is found in the top level consumers.

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

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

Two advantages of decomposers to the environment are as follows :

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

27. What is food web? Explain with example. [DoE]

Ans. Food Web. It is the network of various food chains which are interconnected at various trophic levels.

Since an organism can occupy position in more than one food chain, in a food web it occupies more than one trophic level.

Example. Grass may be eaten by grasshopper as well as rabbit or cattle and each of these herbivores may be eaten by many carnivores such as frog, bird or tiger depending on their food habits.



Long Answer Type Questions 5 Marks

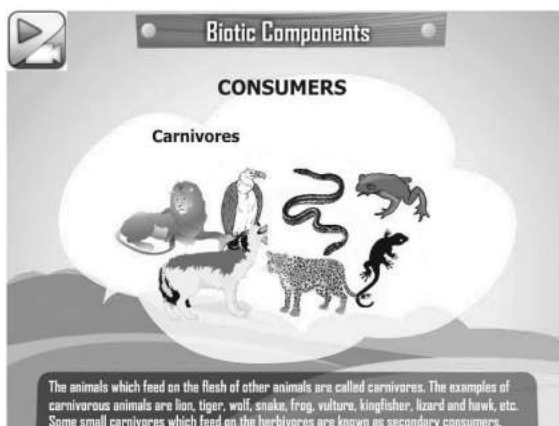


28. Write a note on the producers, consumers and decomposers of the biotic environment with examples of each.

Ans. **Producers:** Those organisms which produce food by photosynthesis, i.e. organisms which can make organic compounds like sugar and starch from inorganic substances using the radiant energy of the sun in the presence of chlorophyll. Producers, therefore are considered as a source of energy for those above it in a food chain.

Examples: All green plants and certain blue-green algae are called autotrophs.

Consumers: Those organisms which depend upon the producers for food, either directly or indirectly by feeding on other consumers for their sustenance. Consumers, therefore, feed upon those below it in a food chain and are called heterotrophs. These can be classified into primary consumers or herbivores, secondary consumers or small carnivores, omnivores and parasites, e.g. cows, humans.



Examples of consumers:

Herbivores are the animals that consume or eat vegetation or plants, e.g. cows, horses. **Carnivores** are the animals that eat flesh of other animals, e.g. tigers, wolves. **Omnivores** are the animals that eat both plants and animals, e.g. humans, cockroaches.

Parasites are those organisms that live on (ectoparasites) or in (endoparasites), the body of another organism, i.e.

host from which it obtains its nutrients, e.g. parasites of man includes fleas and lice (ectoparasites), various protozoans and tapeworms. (endoparasites)

Decomposers: They are those microorganisms that obtain energy from the chemical breakdown of dead organisms or animal or plant wastes. These microorganisms are the decomposers as they breakdown the complex organic substances into simple inorganic substances that enter into the soil and are again used up by the plants.

Examples: Bacteria and fungi.

29. Explain how harmful chemicals enter our body.

[DoE]

Ans. Harmful and toxic chemicals enter our bodies when they are added to the soil and water. Pesticides are used to protect the food crops from diseases, and pests. Chemical wastes of factories are dumped in open or disposed off 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. In this way harmful chemicals enter the food chain. The quantity of these chemicals increase with increase in trophic levels of the food chain because these substances are not degradable and man is at the top of the food chain, so concentration is maximum in human beings. Thus, accumulation of DDT has been maximum in man as DDT is used to destroy pests. DDT is accumulated in the following way in the given food chain –

Water → Phytoplankton → Fish → Bird
0.02 ppm 5.0 ppm 240 ppm 1600 ppm

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

the maximum concentration of harmful chemicals in a food chain.

30. (a) **What is biodiversity? What will happen if biodiversity of an area is not preserved? Mention one effect of it.** [AI 2015]
(b) **With the help of an example explain that a garden is an ecosystem.**
(c) **Why only 10% energy is transferred to the next trophic level?** [DoE]

Ans. (a) Biodiversity is the existence of a wide variety of species of plants, animals and microorganisms in a natural habitat within a particular environment or existence of genetic variation within a species. Biodiversity of an area is the number of species or range of different life forms found there. Forests are 'biodiversity hotspots'.

Every living being is dependent on another living being. It is a chain. If biodiversity is not maintained, the links of the chain go missing. If one organism goes missing, this will affect all the living beings who are dependent on it.

- (b) A garden comprises of different kind of flora and fauna such as grasses, flowering and nonflowering plants, trees, frogs, insects, birds, etc. All these living organisms depend and interact with each other and their growth, reproduction and other vital biological activities depend upon the abiotic component comprising of physical factors like temperature, rainfall, wind, soil and minerals. Therefore, we can say that a garden is an ecosystem.
(c) Only 10% energy is transferred to the next trophic level because other 90 per cent is used for things like respiration, digestion, running away from predators.

PRACTICE QUESTIONS

1. What will happen if deer is missing in the given food chain? [KVS]

Grass → Deer → Tiger

- (a) The population of tiger decreases and the population of grass increases.
(b) The population of grass decreases.
(c) Tiger will start eating grass.
(d) The population of tiger increases.
2. The percentage of solar radiation absorbed by all the green plants for the process of photosynthesis is about: [KVS]
- (a) 1 % (b) 8 %
(c) 5 % (d) 10 %
3. An ecosystem comprising of producers, herbivores and carnivores is an incomplete ecosystem if it does not include:

- (a) secondary consumers
(b) decomposers
(c) top carnivores
(d) secondary and tertiary consumers

4. A correct food chain is:

- (a) Producers → Carnivores → Herbivores
(b) Producers → Herbivores → Carnivores
(c) Herbivores → Producers → Carnivores
(d) Herbivores → Carnivores → Producers

5. The transfer of energy through a terrestrial ecosystem is depicted by energy pyramids. Which of the following statements is true?

- (a) About 10% of the energy from one trophic level is incorporated into biomass of the next level.
(b) Only 25% of the energy in one trophic level is passed onto the next level.

- (c) The energy lost as heat or in cellular respiration is 10% of the available energy of each trophic level.
 (d) Ecological efficiency is highest for top consumers.
6. DDT was accidentally added to the water of a lake. All the organisms in it would be affected by DDT. Which of the organisms would be affected the most?
 (a) Man
 (b) Birds living near the lake
 (c) Fish living in the lake
 (d) Aquatic plants living in the lake
7. Write the aquatic organisms in order of who eats whom starting from producer and form a chain of at least three steps. What name is given to such a chain in an ecosystem and what name is given to each stage? [HOTS]
8. (a) Name the organisms belonging to the second and fourth trophic levels in the food chain comprising the following :
 Frogs, Plants, Snakes, Hawks, Insects.
 (b) DDT has entered food chain. Which food habit is safer- vegetarian or non-vegetarian? [KVS]
9. With the knowledge of energy transfer in the food chain, man can place himself at an advantageous position in the food chain. Explain.
10. Describe with a diagram how energy flows through different trophic levels. Describe how transfer and circulation of material takes place in nature, and the role of decomposers in the process. State how recycling of materials benefits living organisms. [HOTS]

TOPIC COVERED

How do Our Activities Affect the Environment?



Multiple Choice Questions

1 Mark

- Which of the following is biodegradable?
 (a) Plastic mugs (b) Leather belts
 (c) Silver foil (d) Iron nails
- Which of the following is non-biodegradable?
 (a) Wool (b) Nylon
 (c) Animal bones (d) Tea leaves
- Which one of the following will undergo fastest bio-degradation?
 (a) Mango seed (b) Wood
 (c) Mango peel (d) Mango pulp
- Which rays strike on earth due to depletion of ozone layer?
 (a) Visible light (b) Microwaves
 (c) Infrared (d) Ultraviolet
- Nowadays, which type of cups are being generally used in trains for serving tea, coffee, soup, etc. on daily basis?
 (a) Disposable cups made of clay
 (b) Washable plastic cups
 (c) Washable glass cups
 (d) Disposable paper cups
- The manufacturing of chlorofluorocarbons free refrigerators is mandatory throughout the world. How does this help prevent ozone depletion?

[CBSE T.E.R.M.*]

- (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 CFCs from oxygen molecules.
 (d) This will reduce the release of CFCs that reacts with ozone molecules.

7. The table lists some waste products

- Grass cutting
- Polythene bags
- Plastic toys
- Used tea bags
- Paper straw
- Old clothes

Which group of waste materials can be classified as non-biodegradable? [CBSE T.E.R.M.*]

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

Answers

- (b) Leather belts are made from animal skin. They are biodegradable.
- (b) Nylon is synthetic polymer. It is non-biodegradable.
- (d)
- (d) Ozone layer protects us from harmful ultraviolet radiations.
- (d)
- (d)
- (b)



**Very Short Answer
Type Questions 2 Marks**



8. We often observe domestic waste decomposing in the bylanes of residential colonies. Suggest ways to make people realize that the improper disposal of waste is harmful to the environment.

[Foreign 2014, Delhi 2013]

- Ans. (i) Residents Welfare Associations should hold meetings regarding the ill-effects of decomposing domestic waste in the bylanes of colonies.
(ii) Slogans could be written down or posters could be put at the places where people generally throw their domestic waste.

9. Suppose you find a heap of domestic waste, in a nearby park, which is decomposing. What would you do to make the people of the surrounding area realise that such type of disposal of domestic waste is harmful to the environment? [Foreign 2014]

- Ans. (i) By writing slogans or putting posters at the places where people generally throw their domestic waste.
(ii) By motivating the people about proper disposal of waste which prevents pollution that could otherwise endanger human health and environment.
(iii) Banners and signboards educating people about the ill-effects of improper disposal of wastes can be erected/ hanged in residential colonies.
(iv) Street plays highlighting the ill effects of improper disposal of wastes can be organized.

10. "To discard the household waste we should have two separate dustbins, one for the biodegradable waste and the other for the non-biodegradable waste." Justify this statement suggesting the proper way of disposal of these wastes. [Foreign 2014]

- Ans. Biodegradable waste can be recycled for future use. If we discard biodegradable and non-biodegradable waste in the same dustbin, then biodegradable waste will become unfit for recycling. The proper way of disposal of these wastes are:
(i) Biodegradable waste can be converted into compost which can be used as manure.
(ii) Non-biodegradable waste should first be treated and then disposed.

11. Government of India is imposing ban on the use of polythene bags for shopping. List four advantages of using cloth or jute bags over polythene bags.

[Foreign 2013]

- Ans. Advantages of jute and cloth bags are:
(i) They are re-usable.
(ii) They are biodegradable.
(iii) They are stronger than polythene bags and can carry more load.
(iv) They can be repaired at home if torn.

12. State two problems caused by the non-biodegradable waste that we generate in our daily life. [DoE, HOTS]

Ans. Two problems caused by non-biodegradable waste that we generate in our daily life are:

- (i) Waste like plastic, cans etc., if falls on drains causes clogging of drains. Clogged drains causes artificial flood in cities.
(ii) Non-biodegradable waste like polythene when gets buried in soil increases soil temperature making the soil unfit for agriculture.

13. Mention three harmful effects of using polythene bags on the environment. Suggest an effective alternative to these bags. [Foreign 2017]

Ans. Harmful effects:

- (a) They are non-biodegradable and persist in the environment for long periods.
(b) Burning them produces poisonous gases that pollute the air.
(c) When ingested by the animals, it cannot be digested and the animals suffer from indigestion and some may die.

Alternatives: Jute bags/cloth bags.

14. How can we help in reducing the problem of waste disposal? Give any two methods. [DoE]

Ans. Problem of waste disposal can be solved by following methods:

- (i) by disposing biodegradable and non-biodegradable waste separately.
(ii) by reusing materials as much as possible.

15. Mention the basis of classifying substances as biodegradable and non-biodegradable. Give two examples of each.

Ans. Substances which can be broken down into simpler harmless substances in nature by the action of microorganisms are called biodegradable substances. Non-biodegradable substances cannot be broken down into simpler harmless substances in nature.

Examples.

- (i) **Biodegradable:** Agricultural waste and cloth.
(ii) **Non-biodegradable:** DDT and polythene bags.

16. We can get electric energy from coal. Does human being get energy from eating coal? Give reason. [HOTS]

Ans. Enzymes are specific in their action. Specific enzymes are needed for break down of a particular substance. Human body does not contain the enzyme which can break coal to get energy. Hence, we do not get any energy if we try to eat coal.

17. (a) What is meant by garbage? List two classes into which garbage is classified.

- (b) What do we actually mean when we say that the "enzymes are specific in their action"?

[CBSE 2022]

Ans. (a) **Garbage:** A waste or rubbish produced from a household is known as garbage. It includes spoilt food, vegetable peels, leaves, paper, cattle dung, etc.

Two classes in which garbage is classified as:

- (i) Biodegradable garbage
 - (ii) Non-biodegradable garbage
- (b) All enzymes are specific for the type of chemical reaction they catalyse. Specific enzymes are needed for the break down of a particular substance. Biodegradable substances are broken down by biological processes. Microorganisms such as fungi and bacteria break down all living things whereas non-biodegradable substances do not break down by biological processes or by the action of enzymes.

18. A lot of waste is generated in neighborhood. However, almost all of it is biodegradable. What impact will it have on the environment or human health? [CBSE Sample Paper 2023]

Ans. Excess generation of biodegradable wastes can be harmful as

Its decomposition is a slow process leading to production of foul smell and gases. (1 Mark)

It can be the breeding ground for germs that create unhygienic conditions. (1 Mark) [CBSE Marking Scheme]

SA Short Answer Type Questions 3 Marks

19. Write one difference between biodegradable and non-biodegradable wastes. List two impacts of each type of the accumulated waste on environment if not disposed off properly. [CBSE 2023]

Ans. Differences:

Biodegradable wastes	Non-Biodegradable wastes
– These wastes can be broken down into simpler harmless substances in nature by the action of microorganisms.	– These wastes cannot be broken down into simpler harmless substances in nature.

– Two ways in which biodegradable substances affect the environment are:

- Biodegradable substances on decomposing provides a breeding ground for flies, cockroaches and other insects. These insects carry germs and spread various diseases like cholera, diarrhoea, etc.
- During decomposition process of biodegradable substances foul smell and some harmful gases are released which make problem for the nearby living people.

– Two ways in which non-biodegradable substances affect the environment are:

- (a) Chemical like BHC and DDT are carcinogenic in nature, i.e. cancer causing and induce tumors.
- (b) Handling of waste materials may cause skin, respiratory and intestinal infections.
- (c) Non-biodegradable substances do not decompose easily so it produces land and water pollution. (any two)

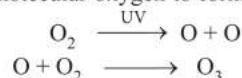
20. Gas A, found in the upper layers of the atmosphere, is a deadly poison but is essential for all living beings. The amount of this gas started declining sharply in the 1980s.

- (a) Identify Gas A. How is it formed at higher levels of the atmosphere?
- (b) Why is it essential for all living beings? State the cause for the depletion of this gas.

[CBSE Sample Paper 2022]

Ans. (a) Gas A is Ozone. (½ Mark)

Ozone at the higher levels of the atmosphere is a product of UV radiation acting on oxygen (O_2) molecule. The higher energy UV radiations split apart some molecular oxygen (O_2) into free oxygen (O) atoms. These atoms then combine with molecular oxygen to form ozone. (1 Mark)



- (b) Ozone shields the surface of the earth / protects living organisms from ultraviolet (UV) radiation released by the sun. (½ Mark)
- Chlorofluorocarbons (CFCs) (½ Mark)
- which are used as refrigerants / in fire extinguishers (½ Mark)

lead to depletion of ozone layer.

[CBSE Marking Scheme]

21. State in brief two ways in which non-biodegradable substances would affect the environment. List two methods of safe disposal of the non-biodegradable waste. [AI 2013]

Ans. (i) Non-biodegradable waste may accumulate in the environment and concentrate in the food chain, thereby can harm organisms.

- (ii) Non-biodegradable substances may pollute the soil and increase soil temperature.

Two methods of safe disposal of non-biodegradable waste are:

- (i) **Recycling:** The wastes are treated and some value materials are extracted for reuse.
- (ii) **Incineration:** Medical and toxic wastes are burnt at high temperature in incinerators. Incinerators transform the waste into ashes.

22. (a) What is 'environmental pollution'?

- (b) Distinguish between biodegradable and non-biodegradable pollutants.

- (c) Choose the biodegradable pollutants from the list given below:

Sewage, DDT, radioactive waste, agricultural waste.

Ans. (a) Environmental pollution is an undesirable change in the physical, chemical or biological characteristics of the natural environment, brought about by man's activities. This pollution may affect the soil, rivers, seas or the atmosphere.

- (b) Differences between:

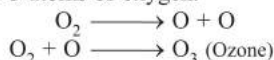
Biodegradable pollutants	Non-Biodegradable pollutants
(i) These pollutants can be broken-down into non-poisonous substances in nature by the action of micro-organisms.	(i) These pollutants cannot be broken-down into non-poisonous substances by microorganisms.
(ii) They get recycled thus, do not need any dumping sites.	(ii) They cannot be recycled thus, require dumping sites.
(iii) These are obtained from living things.	(iii) These are obtained from non-living things.
(iv) They cause minimum environmental pollution.	(iv) They cause environmental pollution.

- (c) Biodegradable pollutants are sewage and agricultural waste.

23. What is ozone? How and where is it formed in the atmosphere? Explain how does it affect ecosystem.

[Foreign 2015]

Ans. Ozone is an isotope of oxygen, i.e. it is a molecule formed by 3 atoms of oxygen.



Ozone exists in the ozone layer of stratosphere. At higher level of atmosphere, O_2 molecule breaks down to 2 oxygen atom. The oxygen atom then combines with the oxygen molecule to form ozone.

Ozone layer in the atmosphere prevents UV rays from reaching earth. Exposure to excess UV rays causes skin cancer, cataract and damages eye and immune system. It also decreases crop yield and reduces population of phytoplankton, zooplankton and certain fish larvae which are an important constituent of aquatic food chain. It also disturbs rainfall, causing ecological disturbance and reduces global food production. Thus, it affects the ecosystem.

24. You have been selected to talk on "ozone layer and its protection" in the school assembly on 'Environment Day.'

(a) Why should ozone layer be protected to save the environment?

(b) List any two ways that you would stress in your talk to bring in awareness amongst your fellow friends that would also help in protection of ozone layer as well as the environment. [Delhi 2017]

Ans. (a) Ozone layer at the higher levels of the atmosphere, acts as a shield to protect earth from the harmful effects of the ultraviolet (UV) radiations; hence, it should be protected.

(b) (i) Urging the people not to buy aerosol products with CFC that are available in the market.

(ii) Conducting poster making competition or street plays presenting the importance of ozone layer on earth.

25. Why is damage to the ozone layer a cause for concern? What are its causes and what steps are being taken to limit this damage?

[CBSE Sample Paper 2023]

Ans. Damage to the ozone layer is a cause for concern because the ozone layer shields the surface of earth from harmful UV radiations from the sun which cause skin cancer in human beings.

Synthetic chemicals like chlorofluorocarbons (CFCs) which are used as refrigerants and in the fire - extinguishers are the main reason for the depletion of the ozone layer.

Steps taken to limit this damage - 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 at 1986 levels. (1×3=3 Marks)

[CBSE Marking Scheme]

Long Answer Type Questions 5 Marks

26. (a) How can we help in reducing the problem of waste disposal? Suggest any three methods.

[Delhi 2019]

(b) Distinguish between biodegradable and non-biodegradable wastes.

Ans. (a) The three methods for reducing the problem of waste disposal are:

(i) **Recycling:** solid, wastes like paper, plastics, metals can be sent to processing factories where they are remoulded or reprocessed to new materials.

(ii) **Production of compost:** Biodegradable wastes like fruit and vegetable peels, plant products, left over food, grass clippings,

human and animal waste can be converted into compost by burying this waste into ground and can be used as manure.

- (iii) **Incineration:** Burning down many household waste, chemical waste and biological waste into ash is known as incineration. A large amount of waste can be easily converted into ash which can be disposed off in landfill.

(b) Differences between:

Biodegradable wastes	Non-Biodegradable wastes
(i) These wastes can be broken-down into non-poisonous substances in nature by the action of micro-organisms.	(i) These wastes cannot be broken-down into non-poisonous substances by microorganisms.
(ii) They get recycled thus, do not need any dumping sites.	(ii) They cannot be recycled thus, require dumping sites.

27. **What are chlorofluorocarbons? How are they responsible for causing ozone hole in atmosphere? What will be the consequences of ozone hole?**

Ans. Carbon compounds which contain chlorine and fluorine are called CFCs (Chlorofluorocarbons). For example, CCl_2F_2 (Dichlorodifluoromethane). CFCs are available in aerosol sprays.

They lead to depletion of ozone layer causing ozone hole. CFCs (Chlorofluorocarbons) react with ozone in stratosphere and deplete ozone.

Consequences of ozone hole:

Ozone layer in the atmosphere prevents UV rays from reaching earth. Due to occurrence of ozone hole, UV rays reach earth. Exposure to excess UV rays cause

skin cancer, cataract and damages eyes and immune system. It also decreases crop yield and reduces population of phyto and zoo planktons and certain fish larvae, which are important constituent of aquatic food chain. It also disturbs rainfall causing ecological disturbance and reducing global food production.

28. (a) **We often observe domestic waste decomposing in the bylanes of residential colonies. Suggest ways to make people realize that the improper disposal of waste is harmful to the environment.** [Foreign 2014, Delhi 2013]

(b) **Suppose you find a heap of domestic waste, in a nearby park, which is decomposing. What would you do to make the people of the surrounding area realise that such type of disposal of domestic waste is harmful to the environment?** [Foreign 2014]

- Ans. (a) (i) Residents Welfare Associations should hold meetings regarding the illeffects of decomposing domestic waste in the bylanes of colonies.
(ii) Slogans could be written down or posters could be put at the places where people generally throw their domestic waste.
(b) (i) By writing slogans or putting posters at the places where people generally throw their domestic waste.
(ii) By motivating the people about proper disposal of waste which prevents pollution that could otherwise endanger human health and environment.
(iii) Banners and signboards educating people about the ill-effects of improper disposal of wastes can be erected/ hanged in residential colonies.
(iv) Street plays highlighting the ill effects of improper disposal of wastes can be organized.

PRACTICE QUESTIONS

- (a) Using 'Kulhads' as disposable cups to serve tea in trains, proved to be a bad idea. Why?
(b) Why is plastic not degraded by bacteria? [KVS]
- How will accumulation of biodegradable waste effect our environment? [KVS]



INTEGRATED (MIXED) QUESTIONS

- (a) Explain 'biological magnification' with the help of an example.
(b) Construct an aquatic food chain showing four trophic levels.
(c) What are the advantages of disposable paper cups over disposable plastic cups? (5 Marks)
- (a) State two problems caused by the non-biodegradable waste that we generate in our daily life. [DoE, HOTS]
(b) What is meant by biodiversity? List two advantages of conserving forests and wildlife.
(c) Draw an energy pyramid showing different trophic level. [DoE] (5 Marks)



ASSERTION AND REASON QUESTIONS

Direction: In the following Questions, the Assertion and Reason have been put forward. Read the statements carefully and choose the correct alternative from the following:

- (a) Both the Assertion and the Reason are correct and the Reason is the correct explanation of the Assertion.
 - (b) The Assertion and the Reason are correct but the Reason is not the correct explanation of the Assertion.
 - (c) Assertion is true but the Reason is false.
 - (d) The statement of the Assertion is false but the Reason is true.
1. **Assertion:** Vegetarian food habit is more beneficial to organisms.
Reason: Only 10% energy is available as food from one trophic level to next.
 2. **Assertion:** Accumulation of harmful chemicals is maximum in case of organisms at higher trophic level.
Reason: Food chain normally do not go beyond 3 or 4 trophic level.

3. **Assertion:** Ozone layer is getting depleted at upper atmosphere which is a cause of concern.
Reason: CFC reacts with ozone and breaks it.
4. **Assertion:** Autotrophs can produce food on its own.
Reason: Green plants can absorb 1% energy of sunlight that fall on the leaves.
5. **Assertion:** Biodegradable waste and non-biodegradable waste should be discarded separately.
Reason: Biodegradable waste are not harmful.
6. **Assertion:** Decomposers act as cleaning agents of environment.
Reason: The decomposers recycle waste material in hydrosphere. [KVS]
7. **Assertion:** Garden is an artificial ecosystem.
Reason: Biotic and abiotic components are manipulated by humans. [KVS]



CASE-BASED QUESTIONS

The following questions are case-based questions with 2-3 short sub-parts.

1. Every living thing plays a role in the food chain and Earth's ecosystems, and the extinction of certain species, whether predators or prey, can leave behind significant impacts. Since the origin of life on Earth, it's fair to say that more species have gone extinct than are currently alive now. Extinction itself is part of the normal course of evolution. The effect of a species would have if it were to fade from existence depends largely on its role in the ecosystem. Predators, for example, are often the first to be threatened by hunting or competition with people and resources. When a predator goes extinct, all of its prey are released from that predation pressure, and they may have big impacts on ecosystems. The loss of a predator can result in what is called a trophic cascade, which is an ecological phenomenon triggered by a predator's extinction that can also impact populations of prey, which can cause dramatic ecosystem and food web changes. If there are too many deer, for example, they can really change the ecosystem because they can destroy forests, and they also carry disease.
 - (a) What is an ecosystem?
 - (b) List two man-made ecosystems.
 - (c) What will be the impact if all the organisms of one trophic level die? Give any one effect.

Or

- (c) Justify the statement; 'All the flesh of a carnivore is grass'.
2. There are more than 1000 pesticides used around the world to ensure food is not damaged or destroyed by pests. Each pesticide has different properties and toxicological effects. Many of the older, cheaper pesticides can remain for years in soil and water. These chemicals have been banned by countries who signed the 2001 Stockholm Convention – an international treaty that aims to eliminate or restrict the production and use of persistent organic pollutants. The toxicity of a pesticide depends on its function and other factors. None of the pesticides that are authorized for use on food in international trade today are genotoxic. Adverse effects from these pesticides occur only above a certain safe level of exposure. When people come into contact with large quantities of pesticide, this may cause acute poisoning or long-term health effects, including cancer and adverse effects on reproduction.
 - (a) Name the pesticides banned by Stockholm Convention.
 - (b) What is biological magnification?
 - (c) Why is DDT is termed as a non-biodegradable substance?

Or

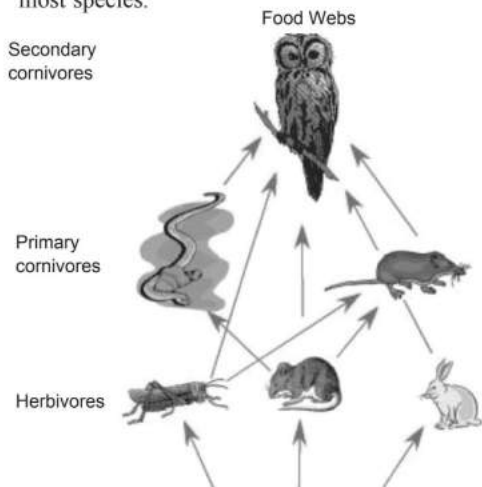
- (c) Which level of food chain will have the maximum

biological magnification? Will the levels of this magnification be different at different levels of the ecosystem?

3. Human body is made up of five important components of which water is the main component. Food as well as potable water are essential for every human being. The food is obtained from plants through agriculture. Pesticides are being used extensively for a high yield in the fields. These pesticides are absorbed by the plants from the soil along with water and minerals and from the water bodies, these pesticides are taken up by the aquatic animals and plants. As these chemicals are not biodegradable, they get accumulated progressively at each trophic level. The maximum concentration of these chemicals gets accumulated in our bodies and greatly affects the health of our mind and body.
 - (a) Why is the maximum concentration of pesticides found in human beings?
 - (b) Give one method which could be applied to reduce our intake of pesticides through food to some extent.
 - (c) Write an aquatic food chain with 4 trophic levels.

Or

- (c) Give two examples to illustrate that indiscriminate use of pesticides may result in the degradation of the environment.
4. Food chains are very important for the survival of most species.



- (a) If 10,000J of solar energy falls on green plants in a terrestrial ecosystem, what percentage of solar energy will be converted into food energy?
- (b) In which trophic level, do rats fall in this food chain?
- (c) If 10J of energy is available to snake, how much energy will be available from snake to owl?

Or

- (c) Why do the number of trophic levels is limited to 3 or 4?
5. The stratosphere is very dry and rarely allows clouds to form. In the extreme cold of the polar winter, however, stratospheric clouds of different types may form. These clouds are called Polar Stratospheric Clouds (PSCs). Scientists recently discovered that polar stratospheric clouds, long known to play an important role in Antarctic ozone destruction, are occurring with increasing frequency in the Arctic. These high-altitude clouds form only at very low temperatures help destroy ozone in two ways: (1) They provide a surface which converts benign forms of chlorine into reactive, ozone-destroying forms, and (2) they remove nitrogen compounds that moderate the destructive impact of chlorine. In recent years, the atmosphere above the Arctic has been colder than usual, and polar stratospheric clouds have lasted into the spring. As a result, ozone levels have been decreasing.

(Information credit: NASA)

[CFPQ, CBSE]

- (a) How is ozone formed in the outer atmosphere?
- (b) Ozone is being continuously destroyed due to extreme low temperatures. However, ozone formation is also a continuous process. Why is there a depletion in the ozone layer still?
- (c) What can be a positive effect of global warming on the depletion of the ozone layer?

Or

- (c) How does ozone layer depletion impact human health?



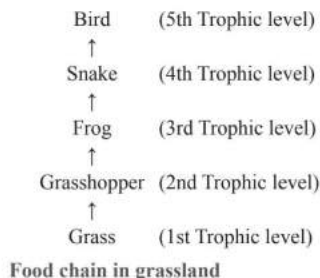
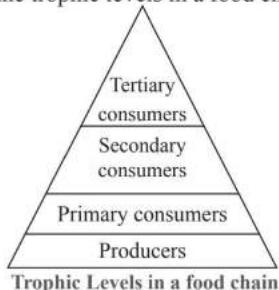
NCERT ZONE

NCERT INTEXT 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.**

Ans. The various steps in a food chain at which the transfer of food takes place are called trophic level. The given example shows the trophic levels in a food chain:



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

Ans. Decomposers decompose dead remains of plants and animals. By doing so, they serve two purposes. Firstly, they reduce the burden on the environment by clearing dead remains. Secondly, they channelize the raw materials back to the environment.

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

Ans. Those substances which are of organic origin are biodegradable, while those of inorganic origin are non-biodegradable. Decomposers such as bacteria and saprophytes breakdown the natural substances such as dead remains of animals and their waste products and utilise organic substances as their food, while other substances cannot be utilised by decomposers as food. Due to this reason, some substances are biodegradable while some others are non-biodegradable. **Examples:**

Biodegradable: Agricultural waste and cloth.

Non-Biodegradable: DDT and polythene bags

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

Ans. Two ways in which biodegradable substances affect the environment are:

- Biodegradable substances on decomposing provides a breeding ground for flies, cockroaches and other insects. These insects carry germs and spread various diseases like cholera, diarrhoea, etc.
- During decomposition process of biodegradable substances foul smell and some harmful gases

are released which make problem for the nearby living people.

3. **Give any two ways in which non-biodegradable substances would affect the environment. [DoE]**

Ans. Two ways in which non-biodegradable substances affect the environment are:

- Chemical like BHC and DDT are carcinogenic in nature, i.e. cancer causing and induce tumors.
- Handling of waste materials may cause skin, respiratory and intestinal infections.
- Non-biodegradable substances do not decompose easily so it produces land and water pollution.

(any two)

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

Ans. Ozone (O_3) is a form of oxygen. It is a triatomic molecule. It forms the ozone layer in our atmosphere. It plays an important role in the ecosystem. The ozone layer absorbs the harmful ultraviolet radiations from the sun and thus, protects us.

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

Ans. The problem of waste disposal can be reduced by different methods. Two methods are given below:

- By using more biodegradable substances and reducing the use of non-biodegradable substances. For example: instead of plastic bags, we should use jute bags or cloth bags for shopping.
- By proper segregation of waste before disposing them.

NCERT EXERCISES

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

Ans. (a), (c) and (d) groups contain only biodegradable items.

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

Ans. (b) Grass → Goat → Human, constitutes a food chain.

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.

Ans. (d) All statements are environment-friendly practices.

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

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

- (i) The population of organisms in the previous trophic level will increase.
- (ii) The organisms in next trophic level will not be able to get the food, so they will migrate to some other ecosystem or die due to starvation.
- (iii) It will cause an ecological imbalance in the food chain.

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

Ans. Yes, the impact of removing all the organisms in a trophic level will be different for different trophic levels. If all the producers are killed, it will cause death or migration of the primary consumers in the ecosystem. In the absence of producers, subsequent level of consumers will also be affected. But if primary consumers are removed, organisms of higher trophic level will die, while those of lower level show exponential growth much beyond the carrying capacity of the environment. It will not be possible

to remove any organism in any trophic level without causing damage to the ecosystem.

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

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

Yes, level of biological magnification will be different at different levels of the ecosystem. The organisms at second trophic level will consume organisms of first trophic level resulting in higher concentration of chemicals than that present in first trophic level. Organisms at third trophic level will consume many organisms of second trophic levels resulting in higher concentration of chemical in third trophic level as compared to second trophic level. Similarly, fourth trophic level will have more concentration than third trophic level.

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

Ans. The problems caused by the non-biodegradable wastes that we generate are as follows:

- (i) They cause water pollution and so water becomes unfit for drinking.
- (ii) They cause land pollution, leading to loss of soil fertility.
- (iii) They cause stoppage of flow of water in drains.
- (iv) They also cause air pollution and make the air poisonous when burnt.

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

Ans. Biodegradable wastes are decomposed by microorganisms into simpler substances themselves and provide raw materials for producers, but they also have adverse effects on the environment.

- (a) By increasing the burden on the environment because they would accumulate.
- (b) By producing foul gases, when they are decomposing.
- (c) Increase in the number of microorganisms in aquatic medium which cause oxygen deficiency in water bodies.

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

Ans. Ozone layer prevents the harmful ultraviolet radiations from entering the atmosphere and reaching the earth's surface. So, depletion of ozone layer has become a concern because UV rays can cause harmful effects on human body and other organisms of the environment.

Fatal diseases like skin cancer, mutation in genetic material (DNA), eye damage, etc. are some harmful effects caused by the depletion of ozone layer.

Two steps to limit this damage are as follows:

- (i) Reduce the use of aerosol spray, propellants such as fluorocarbons and chlorofluorocarbons which cause depletion or hole in ozone layer.

- (ii) Control over large scale nuclear explosions and limited use of supersonic planes.

- (iii) Several developed as well as developing nations of the world have agreed to sign and obey the directions of UNEP (United Nations Environment Programme) to freeze the production of CFCs or to limit their production to some extent.

SELECT EXEMPLAR PROBLEMS

1. Which one of the following is an artificial ecosystem?

- (a) Pond
- (b) Crop field
- (c) Lake
- (d) Forest

Ans. (b)

2. An ecosystem includes

- (a) all living organisms
- (b) non-living objects
- (c) both living organisms and non-living objects
- (d) sometimes living organisms and sometimes nonliving objects

Ans. (c)

3. Excessive exposure of humans to UV-rays results in

- (i) damage to immune system
- (ii) damage to lungs
- (iii) skin cancer (iv) peptic ulcer

- (a) (i) and (ii)
- (b) (ii) and (iv)
- (c) (i) and (iii)
- (d) (iii) and (iv)

Ans. (c)

4. Which group of organisms are not constituents of a food chain?

- (a) Grass, lion, rabbit
- (b) Plankton, man, fish, grasshopper
- (c) Wolf, grass, snake, tiger
- (d) Frog, snake, eagle, grass, grasshopper

Ans. (c)

5. If a grasshopper is eaten by a frog, then the energy transfer will be from

- (a) producer to decomposer
- (b) producer to primary consumer
- (c) primary consumer to secondary consumer
- (d) secondary consumer to primary consumer

Ans. (c)

6. Why is improper disposal of waste a curse to environment?

Ans. Improper disposal of waste is a curse to environment and its components because it pollutes the environment- air, water, soil and cause harmful effects on living organisms. For example, passage of sewage into water body cause eutrophication, killing of animals and acts as a source of water borne pathogens.

7. Write the common food chain of a pond ecosystem.

Ans. Phytoplanktons and aquatic plants → Zooplanktons, small aquatic animals, larvae, insects, etc. → Fish → Bird.

8. What are the advantages of cloth bags over plastic bags during shopping?

Ans. Advantages of cloth bags are as follows—

- (i) They are strong and more durable than plastic bags.
- (ii) They are capable of carrying more things.
- (iii) They are washable.
- (iv) They are made of biodegradable material and do not pollute the environment.
- (v) They can be recycled.
- (vi) They can be reused.

9. Why are crop fields known as artificial ecosystems?

Ans. Crop fields are known as artificial ecosystems because they are man-made and some biotic and abiotic components are maintained, nourished and reaped by human beings.

10. Suggest one word for each of the following statements/definitions:

- (a) The physical and biological world where we live in.
- (b) Each level of food chain where transfer of energy takes place.
- (c) The physical factors like temperature, rainfall, wind and soil of an ecosystem.
- (d) Organisms which depend on the producers either directly or indirectly for food.

Ans. (a) Environment or biosphere.

- (b) Trophic level.
- (c) Abiotic factors.
- (d) Consumers or heterotrophs.

11. Select the mis-matched pair in the following and correct it.

- (a) Biomagnification — Accumulation of chemicals at the successive trophic levels of a food chain
- (b) Ecosystem — Biotic components of environment
- (c) Aquarium — A man-made ecosystem
- (d) Parasites — Organisms which obtain food from other living organisms.

Ans. (b) Ecosystem — Both biotic and abiotic components of the environment.

12. **We do not clean ponds or lakes, but an aquarium needs to be cleaned. Why?** [Delhi 2013]

Ans. An aquarium is an artificial and incomplete ecosystem compared to ponds or lakes which are natural, self-sustaining and complete ecosystems where there is a perfect recycling of materials. Therefore cleaning of aquarium is required.

14. **Give two differences between food chain and food web.**

Ans. Difference:

Food Chain	Food Web
(i) It follows a single pathway through which food energy travels in the ecosystem.	(i) It is an interconnection between food chain through which energy is passed into the ecosystem.
(ii) Organisms present at higher trophic level feeds on single type of organisms.	(ii) Organisms has varied food sources.
(iii) A food chain have 4 to 5 trophic levels with only population of few different species.	(iii) It has numerous population of different species.

(any two)

15. **Name the wastes which are generated in your house daily. What measures would you take for their disposal?**

Ans. The wastes generated daily are kitchen wastes, paper wastes (like newspaper, bags, envelopes), plastic bags, vegetable and fruit peels, dust and empty cartons, etc.

Measures for disposal

- (i) Separation of biodegradable and non-biodegradable, recyclable and non-recyclable wastes.
- (ii) Safe disposal of plastic bags.
- (iii) Preparation of compost from kitchen wastes for home garden or given to waste collector for disposal.
- (iv) Paper waste can be given for recycling.

16. **Suggest suitable mechanism (s) for waste management in fertiliser industries.**

Ans. Fertiliser industries produce mainly two types of wastes—gaseous and effluents which can be minimised as follows:

- (i) Gaseous wastes are passed through wet scrubbers to dissolve the pollutant gases.
- (ii) Effluents should be treated before discharge into surrounding environment.
- (iii) By having a unit to recover sulphur.
- (iv) By recycling the water to minimise discharge of effluents.

13. **Suggest any four activities in daily life which are eco-friendly.**

- Ans.
- (i) Use of cloth bags instead of plastic bags for shopping.
 - (ii) Gardening.
 - (iii) Harvesting of rainwater and preventing wastage of resources.
 - (iv) Use of compost.

[AI 2015]

- (v) By using treated water to irrigate plants in the green belt area.

17. **What are the by-products of fertiliser industries? How do they affect the environment?**

Ans. The by-products of fertiliser industries are oxides of nitrogen and sulphur, i.e. gases such as SO_2 and NO . They pass into the atmosphere and cause extensive air pollution, and are responsible for acid rain, which is harmful to living beings. Acid rain pollutes the soil and harm crop production. It also affects the buildings and monuments.

18. **Explain some harmful effects of agricultural practices on the environment.**

Ans. Some harmful effects of agricultural practices on the environment are as follows:

- (i) Use of fertilisers change the chemistry of soil and kills useful microbes.
- (ii) Use of non-biodegradable pesticides leads to bio-magnification.
- (iii) Extensive cropping causes loss of soil fertility.
- (iv) Use of ground water for agriculture has resulted in lowering water table.
- (v) Natural ecosystems and habitat have been damaged during clearing of land for agriculture.