

## Very Short Answer Type Questions

[1 Mark]

**Q. 1. Why is it necessary to conserve our environment?**

**Ans.** It is necessary to conserve our environment in order to maintain ecological balance.

**Q. 2. Name any two biodegradable and two non biodegradable pollutants.**

**Ans.** Biodegradable: domestic sewage and wood. Non Biodegradable: Plastic and DDT

**Q. 3. we often use the word environment. What does it mean?**

**Ans.** Environment is the physical, chemical and biological conditions of the region.

**Q. 4. Which two of the following are biodegradable?**

**Tomato leaves, aluminium wire, synthetic fibre and wool**

**Ans.** Tomato leaves and wool.

**Q. 5. Which of the following are non-biodegradable?**

**Wool, glass, silver foil and leather.**

**Ans.** Glass and silver foil.

**Q. 6. What is the function of ozone in the upper atmosphere?**

**Ans.** Ozone shields the surface of the earth from ultraviolet rays from the Sun.

**Q. 7. Why should biodegradable and non-biodegradable wastes be discarded in two separate dustbins?**

**Ans.** Biodegradable and non-biodegradable wastes should be discarded in two separate dustbins so that the time and energy required in segregation may be saved and waste may be disposed off quickly.

**Q. 8. What are the two main components of our environment?**

**Ans.** The two components are biotic or living and abiotic or non-living component.

**Q. 9. List two biotic components of a biosphere.**

**Ans.** Producers, consumers and decomposers are the biotic components of a biosphere.  
(Any two)

**Q. 10. Name any two abiotic components of an environment.**

**Ans.** Abiotic components of an environment include soil and water.

**Q. 11. Name two decomposers.**

**Ans.** Bacteria and fungi.

**Q. 12. Write an aquatic food chain.**

**Ans.** Phytoplankton → Zooplankton →  $\begin{matrix} \text{Fish} \\ \text{(small fish)} \end{matrix}$  →  $\begin{matrix} \text{Seal} \\ \text{(Big fish)} \end{matrix}$

**Q. 13. What will be the amount of energy available to the organisms of the 2nd trophic level of a food chain, if the energy available at the first trophic level is 10,000 joules?**

**Ans.** On applying the 10% law to the food chain the organisms of the 2nd trophic level of the food chain will have  $\frac{10}{100} \times 10,000 = 1,000$  joules of energy.

**Q. 14. Draw a food chain with four trophic levels.**

**Ans.** Plants → Rats → Snakes → Hawks

**Q. 15. The first trophic level in a food chain is always a green plant. Why?**

**Or**

**Why do producers always occupy the first trophic level on every food chain?**

**Ans.** The first trophic level is always a green plant because only plants can utilise the radiant energy of the sun and transform it to chemical form during photosynthesis.

**Q. 16. Which of the following are always at the second trophic level of food chains?**

**Carnivores, Autotrophs, Herbivores**

**Ans.** Herbivores are always at the second trophic level of food chains.

**Q. 17. 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.**

**Insects, Hawk, Grass, Snake, Frog.**

**Ans.** Hawk will have the highest concentration of non-biodegradable chemicals.  
The phenomenon associated is biomagnification.

**Q. 18. Write the full name of the group of compounds mainly responsible for the depletion of ozone layer.**

**Ans.** Chlorofluorocarbons

**Q. 19. List two examples of natural ecosystem.**

**Ans.** Forests, ponds, lakes are examples of natural ecosystem.

**Q. 20. Why are green plants called producers?**

**Ans.** Green plants are called producers because they prepare food by photosynthesis using solar energy.

**Q. 21. List four common waste disposal methods.**

**Ans.** Compost, recycling of wastes, landfills and incineration.

**Q. 22. What is incineration?**

**Ans.** Incineration means 'reducing to ashes'. The burning of substances at high temperature to forms ash is called incineration.

**Q.23. Why is improper disposal of waste a curse to environment?**

**Ans.** Wastes pollute our environment, air, soil and water, and cause harmful effects on all living organisms.

**Q. 24. The depletion of ozone layer is a cause of concern. Why?**

**Ans.** Ozone layer is very important for the existence of life on earth because it prevents harmful ultraviolet (U V) radiations coming from the Sun to reach the earth.

**Q. 25. What destructive effect do chlorofluorocarbons bring about in the atmosphere?**

**Ans.** CFCs deplete ozone from ozone shield, resulting in increasing the passage of harmful ultraviolet radiation to the earth.

**Q. 26. Write one negative effect, on the environment, of affluent life style of few persons of a society.**

**Ans.** Affluent lifestyle results in:

(i) generation of excessive waste materials.

(ii) Excessive use of natural resources like coal and petroleum which causes pollution.

(iii) Use of excessive non biodegradable material in packaging. (Any one)

## Short Answer Type Questions – I

[2 Marks]

**Q. 1. Why are crop fields known as artificial ecosystems?**

**Ans.** Crop fields are man-made and some biotic and abiotic components are manipulated by humans. Therefore, they are known as artificial ecosystems.

**Q. 2. Suggest one word for each of the following statements/definitions:**

(i) The physical and biological world where we live in.

(ii) Each level of food chain where transfer of energy takes place.

(iii) The physical factors like temperature, rainfall, wind and soil of an ecosystem.

(iv) Organisms which depend on the producers either directly or indirectly for food.

**Ans.** (i) Environment/biosphere

(ii) Trophic level

(iii) Abiotic factors

(iv) Consumers/heterotrophs

**Q. 3. Why are bacteria and fungi called decomposers? List any two advantages of decomposers to the environment.**

**Ans.** Bacteria and fungi are called decomposers because bacteria and fungi break down the dead and decaying organic matter into simpler substances and provide the nutrients back to the soil.

Advantages of decomposers to the environment:

(i) They act as natural scavengers.

(ii) They help in recycling of nutrients.

**Q. 4. Consider the food chain: Grass → Deer → Lion. What will happen if lions are removed from the above food chain?**

**Ans.** Removal of lions from the above food chain will increase the number of deer to such an extent that they will eat up the whole grass. The density of producer like grass will be very much reduced and this will turn the area into a desert

**Q. 5. Which of the following belongs to the same trophic level?**

**Grass, Hawk, Rabbit, Frog and Deer.**

**Ans.** Grass is producer, hawk and frog are carnivores (top and lower), rabbit and deer are herbivores. Since rabbit and deer are both herbivores, they belong to the same trophic level.

**Q. 6. Write the common food chain of a pond ecosystem.**

**Ans.** Phytoplanktons and aquatic plants →small aquatic animal larvae and insects  
→fishes→birds.

**Q. 7. In a lake contaminated with pesticides, which one of the following organism living in the lake will contain the maximum amount of pesticide?**

**Small fish, zooplankton, big fish, phytoplankton.**

**Ans.** The concentration of pesticide will increase with the rise of trophic level in the food chain.

Phytoplankton →Zooplankton →Small fish → Big fish (maximum pesticide)

Therefore, big fishes will have maximum amount of pesticides.

**Q. 8. What is the percentage of solar energy trapped and utilised?**

**Ans.** 1 % in terrestrial habitats and 0.2% in aquatic ecosystems is the percentage solar energy trapped and utilised.

**Q. 9. Why does a food chain consist of only three to four steps?**

**Ans.** On an average, only 10% of the food available to a trophic level is transferred to the next trophic level. Since, the amount of available energy keeps on becoming less as we move to higher trophic levels, so very little usable energy remains after four trophic levels. That is why a food chain consists of only three to four steps.

**Q. 10. With the help of an example explain how indiscriminate use of pesticides may result in the degradation of the environment.**

**Ans.** Indiscriminate use of pesticides may result in the degradation of the environment. For example, DDT is an organic pesticide which is used to kill pests in crop fields. When it is used in large quantity it can be passed along the food chain from crops to man or other animals and birds and can harm them.

**Q. 11. State any two practices which can help in the protection of our environment.**

**Ans.** Two practices which can help in the protection of our environment are:

(i) Disposal of the waste after its separation as biodegradable and non- biodegradable material.

(ii) Judicious use of unleaded petrol and alternate sources of energy

**Q. 12. What are the by-products of fertiliser industries? How do they affect the environment?**

**Ans.** The harmful by-products are gases such as SO<sub>2</sub> and NO. They cause extensive air pollution and are responsible for acid rain.

**Q. 13. The number of malarial patients in a village increased tremendously when large number of frogs were exported from the village. What could be the cause for this?**

**Ans.** The food chain in the given situation will be:

Phytoplankton→Zooplankton→Mosquito larva →Frogs

In the absence of frogs (as they were exported), more mosquito larvae survived giving rise to large number of mosquitoes. The large number of mosquitoes caused increased incidences of malaria.

## Short Answer Type Questions – II

[3 marks]

**Q. 1. Differentiate between biodegradable and non-biodegradable substances with the help of one example each. List two changes in habit that people must adopt to dispose non-biodegradable waste, for saving the environment.**

**Ans.**

S.NO.	Biodegradable wastes	Non-biodegradable wastes
(i)	Waste materials which can be broken down into harmless substances in nature in due course of time by the action of microorganisms such as certain bacteria are called biodegradable wastes.	Waste materials which cannot be broken down into harmless substances by the action of microorganisms in nature are called non-biodegradable wastes.
(ii)	<b>Examples:</b> Cattle dung, wool, paper, compost.	<b>Examples:</b> Plastics, polythene bags, metal articles, glass objects.

People should adopt following changes in habit:

- (a) Dispose household waste, chemical waste and hospital waste in a landfill
- (b) Broken plastic articles such as buckets, bowls, cups, plates, etc., should be sent to plastic processing factories.

**Q. 2. Give reason to justify the following:**

- (a) **The existence of decomposers is essential in a biosphere.**
- (b) **Flow of energy in a food chain is unidirectional.**

**Ans.** (a) The existence of decomposers is essential in a biosphere because they breakdown complex organic substances into simple inorganic substances that can be absorbed by the plants. Thus, decomposers:

(i) replenish the soil naturally

(ii) helps in removing the biodegradable waste.

(b) In a food chain the energy moves progressively through the various trophic levels, it is no longer available to the previous level (i. e., autotrophs) and the energy captured by the autotrophs does not go back to the solar input.

Hence, the flow of energy is unidirectional.

**Q. 3. What is biodiversity? What will happen if biodiversity of an area is not preserved? Mention one effect of it.**

**Ans.** The variety of life forms found in a particular region forms its biodiversity. If biodiversity of an area is not preserved, it will result in

- (i) natural calamities such as floods, forest fires and hurricanes.
- (ii) soil erosion and desertification because of deforestation.
- (iii) large-scale habitat losses and extinction of vulnerable animal and plant species.
- (iv) sudden climatic changes and instability in the functioning of the ecosystem.

The effect of biodiversity loss would be disturbance of ecosystem balance.

**Q. 4. 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.**

**Ans.** An ecosystem is defined as a dynamic system of biotic and abiotic components and there is a continuous flow of energy between the different components.

**Its two main components are:**

- (i) Biotic component/living organisms
- (ii) Abiotic component/physical factors

An aquarium needs to be cleaned regularly because it is an artificial and incomplete ecosystem in which natural decomposers are absent and the water is stagnant. Thus, water do not clean itself in an aquarium.

**Q. 5. "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.**

**Ans.** In a food chain the energy moves progressively through the various trophic levels and is no longer available to the organisms of the previous trophic level. The energy captured by the autotrophs does not revert back to the solar input. Thus, energy flow in food chains are said to be unidirectional.

Pesticides used for crop protection when washed away go down into the soil. These pesticides absorbed by plants which are the producers. On consumption of these plants, the pesticides enter our food chain and being non-biodegradable, these chemicals get accumulated progressively and enter our body.

**Q. 6. Give two differences between food chain and food web.**

**Ans.**

Food Chain	Food Web
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1. Food chain is a series of organisms feeding on one another.	1. Food web consists of a number of interlinked food chains.
2. Members of higher trophic level feed upon a single type of organism of the lower trophic level.	2. Members of higher trophic level can feed upon organisms of the lower trophic levels of other food chain.

**Q. 7. Why does vegetarian habit help us in getting more energy? In terms of energy who is at an advantageous position (vegetarian or a non- vegetarian)? Why?**

**Ans.** We know that, vegetarians obtain food directly from plants while non- vegetarians get the food from animals. Animals (herbivores) contain 10% of food energy as compared to plants (producers). For example; the same amount of producer which supplies say 1000 J of food energy to a vegetarian will provide only 100 J of food energy to a non-vegetarian. Hence, a vegetarian will be at an advantageous position.

**Q. 8. Calculate the amount of energy available to tiger in the following food chain if plants have 30,000 J of energy available from the Sun:**

**Plant → Deer → Tiger**

**Ans.** Plants can trap only 1% of the Sun's energy falling on them. Now, 1% of 30,000 J is 300 J which is the energy available to plants.

The plants are eaten up by deer. According to 10% law, 10% of 300 J, i. e., 30 J of energy will be available to deer as food.

The deer will transfer 10% of its 30 J energy to the tiger. Thus, the food energy available to the tiger will be 10% of 30 J which is 3 J.

$$\begin{array}{ccccccc} \text{Sun} & \xrightarrow{1\% \text{ absorbed}} & \text{Plants} & \xrightarrow{10\%} & \text{Deer} & \xrightarrow{10\%} & \text{Tiger} \\ (30,000 \text{ J}) & & (300 \text{ J}) & & (30 \text{ J}) & & (3 \text{ J}) \end{array}$$

**Q. 9. Give three characteristics of food chain.**

**Ans.** (i) A food chain is always straight and proceeds in a progressive straight line.

(ii) A food chain helps in understanding the food relationship and interactions among various organisms in an ecosystem.

(iii) It also helps to understand the movement of toxic substances in an ecosystem and the problem of their biological magnification.

**Q. 10. Describe any four modes of disposal of waste.**

**Ans.** (i) Disposing of biodegradable wastes in biogas plants so that it can help in the preparation of biogas and manure.

(ii) Solid wastes should be buried in urban areas as landfills.

- (iii) Some solid wastes (plastic, paper and metals) should be recycled.
- (iv) Large amount of waste must be burnt at high temperature (incineration).

**Q. 11. What are the advantages of cloth bags over plastic bags during shopping?**

**Ans.** Cloth bags:

- (i) are capable of carrying more items.
- (ii) are made of biodegradable material.
- (iii) do not pollute our environment.
- (iv) can be reused.

**Q. 12. How is ozone formed in the upper atmosphere? What causes its damage?**

**Ans.**  $O_2 \xrightarrow{UV} O + O$



Certain harmful chemicals such as chlorofluorocarbons (CFCs), are released into the air. These accumulate in the upper atmosphere and react with ozone resulting in reduction of the ozone layer by forming a hole. Thus, ozone layer becomes thinner and gets depleted allowing more ultraviolet rays to pass through the earth's atmosphere. These radiations are highly damaging to organisms and cause skin cancer, damage to eyes, including increased incidence of cataract and damage to immune system of human beings and other animals.

## Long Answer Type Questions

[5 marks]

**Q. 1. Suggest any five activities in daily life which are eco-friendly.**

- Ans.** (i) Separation of biodegradable and non-biodegradable substances  
(ii) Gardening  
(iii) Use of gunny bags/paper bags in place of polythene/plastic bags  
(iv) Use of compost and vermicompost in place of fertilisers  
(v) Harvesting rainwater

**Q. 2. Name the wastes which are generated in your house daily. What measures would you take for their disposal?**

- Ans.** (i) Kitchen wastes.  
(ii) Paper wastes like newspapers, bags, envelopes.  
(iii) Plastic bags.  
(iv) Vegetable/fruit peels/rind.

### Measures for disposal

- (i) Segregation of biodegradable and non-biodegradable Wastes.  
(ii) Safe disposal of plastic bags.  
(iii) Vegetable/fruit peels can be placed near trees/plants, which on decomposition will enrich the soil with nutrients.  
(iv) Give paper wastes for recycling.  
(v) Prepare a compost pit for kitchen wastes.

**Q. 3. Explain some harmful effects of agricultural practices on environment.**

- Ans.** (i) Excessive use of fertilisers changes the chemistry of soil and kills useful microbes.  
(ii) Excessive use of non-biodegradable chemical pesticides leads to biological magnification.  
(iii) Extensive cropping causes loss of soil fertility.  
(iv) Excess use of ground water for agriculture lowers the water table.  
(v) Damage to natural ecosystem/habitat.

## HOTS (Higher Order Thinking Skills)

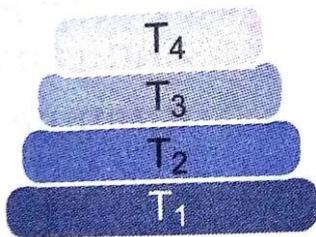
**Q.1. Select the mis – matched pair in the following and correct it.**

- (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)** is not a matching pair.

Both biotic and abiotic components of environment constitute an ecosystem.

**Q.2. In the given figure, the various trophic levels are shown in a pyramid. At which trophic level is maximum energy available?**



**Ans.** At T<sub>1</sub>, maximum energy is available because it comprises of the producers.

**Q.3. What will be the direction of energy transfer in each of the following cases?**

- (a) Grasshopper is eaten by a frog.
- (b) A deer feeds on grass.
- (c) A deer is eaten by a lion

**Ans. (a)** primary consumer to secondary consumer.

**(b)** Producer to primary consumer.

**(c)** Secondary consumer to tertiary consumer.

## Value Based Questions

**Q. 1. Achal's teacher is teaching their class about fuels today. She tells them 'Always turn off the engine of your car at red lights'. The next day Achal's father drives him to school. At the red light he does not turn the engine off. When Achal asks him to do so he says that the light is of short duration and this won't save the fuel.**

**Based on the above statement, answer the following questions.**

- (i) Which type of fuel is used in vehicles? Is it renewable or non-renewable?**
- (ii) How can you contribute towards saving these fuels at your level?**
- (iii) What values are being neglected by Achal's father?**

**Ans. (i)** Fossil fuel - non-renewable.

**(ii) (a)** Travelling in public transport; arranging for car pools.

**(b)** Opting for CNG as a motor fuel instead of petrol and diesel.

**(iii)** Concern for environment, judicious use of non-renewable sources of energy.

**Q. 2. You observe that a gardener working in the park near your house collects the dry leaves from the garden and burns it. He also uses synthetic fertilisers for growth of plants.**

**Answer the following questions based on the above information:**

- (i) Which environmental values is the gardener disrespecting?**
- (ii) How can the first activity be changed to make it environmental friendly?**
- (iii) How can the second activity be changed to promote environmental health?**
- (iv) Suggest one activity to inculcate such environmental values in students.**

**Ans. (i)** Environmental concern/Environmental health.

**(ii)** The leaves may be buried in the soil to produce manure.

**(iii)** Organic manure may be used in place of synthetic fertilisers.

**(iv)** By creating proper awareness about the ill environmental impact from existing practices and benefits from changed practices. Group discussions/Debates/ Community service.

**Q. 3. You are walking by a store along with your friend. Both of you see a poster on the wall saying 'Say No To Plastics'. Your friend disagrees with the content of the poster and recounts the uses and advantages of plastic. You contradict him saying that plastics are harmful to the environment.**

**Answer the following questions based on the above information:**

- (i) Which values are being disrespected by your friend by not agreeing with you?**
- (ii) How will you convince him that plastics are harmful to the environment?**

**(ii) Government has banned the use of plastics and has asked to use paper bags or jute bags instead. How will you get the decision implemented effectively?**

**Ans. (i)** Environmental protection, reducing environmental pollution, concern for life.

**(ii)** Plastics are non-biodegradable. If they are eaten by animals they block their digestive system and if they get buried in soil it would become infertile.

**(iii) (a)** Totally avoid using plastics through personal action.

**(b)** Organise mass campaigns with the help of friends and family members.

**Q. 4. Plastic production is increasing day by day in spite of the fact that plastic is harmful for the environment.**

**Based on the above statement answer the following.**

**(i) What are the harmful effects of plastic usage?**

**(ii) In our day to day situation what are the alternatives that we can use instead of plastics.**

**Ans. (i) (a)** Environmental pollution.

**(b)** Burning plastics can cause pollution.

**(c)** Plastic cause harm to the cattle/animals if enter inside their alimentary canal.

**(ii)** Paper bags/jute bags can be used instead of plastic bags.

**Q. 5. Write any three characteristics of a food chain. Dharmesh always treated the chemical effluent before disposing it in the water body. Mention any three moral values possessed by Dharmesh.**

**Ans. Characteristics of a food chain:**

**(i)** Unidirectional

**(ii)** Helps in understanding the food relationship and interaction among various organisms in an ecosystem

**(iii)** Helps to understand movement of toxic substances and the problem of their biological magnification

**Moral values possessed by Dharmesh:**

**(i)** Sensitive towards environment

**(ii)** Possesses knowledge about biological magnification

**(iii)** Scientific temperament

**(iv)** Conscious (Any three)