

Chapter – 15 Our Environment

Multiple Choice Questions

Q1. Which one of the following is an artificial ecosystem?

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

Answer: Option b)

Crop field is an artificial ecosystem. It is an agricultural land created by man. Pond, lake and forests are natural ecosystem, as they are self-sustainable and do not need human interference for their maintenance.

Q2. In a food chain, the third trophic level is always occupied by

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

Answer: Option a)

In a food chain, the third trophic level is always occupied by carnivores that feed on herbivores.

Q3. 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 non-living objects

Answer: Option c)

All the interacting organisms in an area together with the non-living constitutes of the environment form an ecosystem.

Q4. In the given food chain, suppose the amount of energy at fourth trophic level is 5kJ, what will be the energy available at the producer level?

Grass → Grasshopper → Frog → Snake → Hawk

- a) 5 kJ
- b) 50 kJ
- c) 500 kJ
- d) 5000 kJ

Answer: Option d)

According to law, 10% of the energy in a trophic level of organisms is available for transfer to the next higher trophic level. In this food chain, at the 4th trophic level, 5kJ energy is available to the snake. So, the energy available at the producer level is 5000 kJ.

Q5. Accumulation of non-biodegradable pesticides in the food chain in increasing amount at each higher trophic level is known as

- a) Eutrophication
- b) Pollution
- c) Bio-magnification
- d) Accumulation

Answer: Option c)

Bio-magnification is the accumulation of non-biodegradable pesticides in the food chain in increasing amount at each higher trophic level. The maximum concentration of these chemicals are accumulated in human beings as they occupy top level in any food chain.

Q6. Depletion of ozone is mainly due to

- a) Chlorofluorocarbon compounds
- b) Carbon monoxide
- c) Methane
- d) Pesticides

Answer: Option a)

Depletion of ozone is mainly due to chlorofluorocarbons (CFCs). These are synthetic chemicals which are used as refrigerants and in fire extinguishers.

Q7. Organisms which synthesis carbohydrates from inorganic compounds using radiant energy are called

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

Answer: Option b)

Organisms which prepare carbohydrates from inorganic compounds with solar energy are called producers, example, all green plants, blue-green algae.

Q8. In an ecosystem, the 10% of energy available for transfer from one trophic level to the next is in the form of

- a) Heat energy
- b) Light energy
- c) Chemical energy
- d) Mechanical energy

Answer: Option c)

The 10% energy available for transfer from one trophic level to next in an ecosystem is chemical energy.

Q9. Organisms of a higher trophic level which feed on several types of organisms belonging to a lower trophic level constitute the

- a) Food web
- b) Ecological pyramid
- c) Ecosystem
- d) Food chain

Answer: Option a)

Organisms of a higher trophic level feeding on different types of organisms of lower trophic level is called food web.

Q10. Flow of energy in an ecosystem is always

- a) Unidirectional
- b) Bidirectional
- c) Multidirectional
- d) No specific direction

Answer: Option a)

Flow of energy in an ecosystem is always unidirectional. This is because the energy that is captured by the autotrophs cannot be returned to the solar input and the energy which passes to herbivores cannot be returned to autotrophs.

Q11. Excessive exposure of humans to UV-rays results in

- a) **Damage to immune systems**
- b) **Damage to lungs**
- c) **Skin cancer**
- d) **Peptic ulcers**

Answer: Option c)

The UV-rays have harmful effects on human beings, animals and plants causing skin cancer, cataract in eyes, damage to immune system by decreasing the body's resistance to disease.

Q12. In the following groups of materials, which groups(s) contains only non-biodegradable items?

- i) **Wood, paper, leather**
- ii) **Polythene, detergent, PVC**
- iii) **Plastic, detergent, grass**
- iv) **Plastic, bakelite, DDT**

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

Answer: Option d)

Substances that are not broken down by natural biological processes are non-biodegradable, example, polythene, detergent, PVC, plastics, Bakelite, DDT etc.

Q13. Which of the following limits the number of trophic levels in a food chain?

- a) **Decrease in energy at higher trophic levels**
- b) **Deficient food supply**
- c) **Polluted air**
- d) **Water**

Answer: Option a)

Decrease in energy at higher trophic levels limits the number of trophic levels in a food chain. At each trophic level, a large amount of energy is use for the maintenance of organisms.

Q14. Which of the statement is incorrect?

- a) All green plants and blue-green algae are producers
- b) Green plants get their food from organic compounds
- c) Producers prepare their own food from inorganic compounds
- d) Plants converts solar energy into chemical energy

Answer: Option b)

Green plants get their food from inorganic compounds using solar energy of the sun in the presence of chlorophyll.

Q15. Which group of organisms are not constituents of a food chain?

- i) Grass, lion, rabbit, wolf
- ii) Plankton, man, fish, grasshopper
- iii) Wolf, grass, snake, tiger
- iv) Frog, snake, eagle, grass, grasshopper

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

Answer: Option c)

Food chain (ii) is an aquatic food chain in which grasshopper cannot take part. The correct sequence is

Plankton → Zooplankton → Fishes → Man

In food chain (iii) wolf, snake and tiger are carnivores.

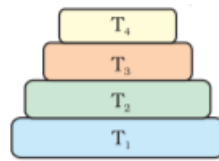
Q16. The percentage of solar radiation absorbed by all the green plants for the process of photosynthesis is about

- a) 1%
- b) 5%
- c) 8%
- d) 10%

Answer: Option a)

The green plants capture about 1% of the energy of sunlight that falls on their leaves for the process of photosynthesis.

Q17. In the given figure, the various trophic levels as shown in a pyramid. At which trophic level is maximum energy available?



- a) T_4
- b) T_2
- c) T_1
- d) T_3

Answer: Option c)

The maximum energy is at T_1 . There is progressive decline in the amount of energy available from producer to higher trophic levels, that is, $T_1 > T_2 > T_3 > T_4$. This is because at each trophic level, a large portion of energy is utilised for maintenance of organisms at that trophic level and lost as heat.

Q18. What will happen if deer is missing in the food chain given below?

Green → Deer → Tiger

- a) The population of tiger increases
- b) The population of grass decreases
- c) Tiger will start eating grass
- d) The population of tiger decreases and the population of grass increases

Answer: Option d)

If deer is missing in food chain, there will be insufficient food for the tigers. So the tigers will die due to starvation and the population of tigers will decrease. Since, grass is not eaten by deer, the growth of grass will also increase.

Q19. The decomposers in an ecosystem

- a) Convert inorganic material to simpler forms
- b) Convert organic material to inorganic forms
- c) Convert inorganic materials into organic compounds
- d) Do not breakdown organic compounds

Answer: Option b)

The decomposers in an ecosystem convert organic material to inorganic forms, that go into the soil and are once again used up by the plants. Decomposers feed on dead remains and waste products or organisms.

Q20. If a grasshopper is eaten by a frog, then the energy transfer will be form

- a) Producers to decomposer
- b) Producers to primary consumer
- c) Primary consumer to secondary consumer
- d) Secondary consumer to primary consumer

Answer: Option c)

In a food chain, when grasshopper is eaten by a frog, then the energy will transfer from primary to secondary consumer.

Q21. Disposable plastic plates should not be used because

- a) They are made of materials with light weight
- b) They are made of toxic materials
- c) They are made of biodegradable materials
- d) They are made of non-biodegradable materials

Answer: Option d)

Disposable plastic plates should not be used because they are non-biodegradable materials like plastic etc. The non-biodegradable materials cannot be changed into harmless substances in nature, so are major pollutant.

Short Answer Type Questions

Q22. Why is improper disposal of waste a curse to environment?

Answer:

Disposal of waste is 'to get rid of waste'. Improper disposal of waste is a curse to environment as it cause substantial harm to human health and pollute our environment. Improper waste storage or disposal contaminates surface and groundwater supplies.

Q23. Write the common food chain of a pond ecosystem.

Answer:

Producers. Rooted or floating plants usually algae, called phytoplankton.

Consumers. Animals of the ecosystem which depends on the producers for food directly.

Herbivores. The algae are eaten up by small fish.

Carnivores. The protozoa are eaten up small fish.

Algae → Protozoa → Small fish → Large fish/animal/bird

Q24. What are the advantages of cloth bags over plastic bags during shopping?

Answer:

Advantages of cloth bags over plastic bags:

- i) Cloth bags are biodegradable so they do not pollute the environment
- ii) Cloth bags are capable of carrying more things
- iii) They can be reused over and over again

Q25. Why are crop fields known as artificial ecosystem?

Answer:

Artificial ecosystems are those ecosystems which are modified and managed by human beings. Crop fields are man-made, plants do not grow naturally rather most of the plants are grown by human according to the season, type of soil etc. crop fields are not like wild forest area which is left to the care of nature and can sustain itself.

In crop fields, the land is managed, soil is prepared for sowing seeds, then irrigated and further progress is also kept under observation for getting good yield.

So, crop field are known as artificial ecosystem.

Q26. Differentiate between biodegradable and non-biodegradable substances. Give examples.

Answer:

Difference between biodegradable and non-biodegradable substances are:

Biodegradable substances	Non-biodegradable substances
Substance that are broken into simpler substances by biological process.	Substances that cannot be broken into simpler ones by biological processes.
They are environment friendly as they usually do not pollute the environment.	They are not environment friendly as they are major pollutants of the environment.
Example: wool, paper, cotton, fruit and vegetable peel, leaves etc.	Example: DDT, polythene bags, plastics, metal articles like iron nails, synthetic fibres etc.

Q27. Suggest one word for each of the following statement/definition.

- 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

Answer:

- a) Environment
- b) Trophic level
- c) Abiotic factors
- d) Consumers/heterotrophs

Q28. Explain the role of decomposers in the environment.

Answer:

Organisms that feed dead plants and animals are called as decomposers, they break complex organic compounds of dead remains into simpler substances and obtain nutrition from them. These substances are mixed with the soil and the atmosphere. Thus, they play following roles

- i) Help in recycling of material, replacement of the soil's nutrients etc.
- ii) They also clean surroundings by decomposing organisms and organic wastes.

Q29. Select the mis-matched pair in the following and correct it.

(a) Bio-magnification	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

Answer: Option b)

An ecosystem consists of biotic components and abiotic components of environment.

Q30. We do not clean ponds or lakes, but an aquarium needs to be cleaned. Why?

Answer:

A pond or lake is a natural ecosystem. They are self-sustaining and complete, in them, all the organisms of food chain are available. If any organism dies, there are decomposers to decompose their bodies into simpler substances.

An aquarium on the contrary is an artificial and incomplete ecosystem. The abiotic component are not supplied naturally to it. It may not have all the biotic components init. If a fish die in an aquarium in the absence of decomposer, it will lie there as a rotten body, polluting the water of aquarium. Thus, an aquarium needs regular clearing.

Long Answer Type Questions

Q31. Indicate the flow of energy in an ecosystem. Why is it unidirectional? Justify.

Answer:

The flow of energy in an ecosystem occurs in following:

Sun → Producers → Herbivore → Carnivore

The flow of energy is unidirectional because:

- i) Energy flows from one trophic level to another and cannot return back. Energy as heat is lost in the environment.
- ii) the available energy decreases at higher trophic level. Out of the total energy available, 10% is passed on to the next trophic level, so its impossible for energy to flow in the reverse direction.

Q32. What are decomposers? What will be the consequences of their absence in an ecosystem?

Answer:

Organisms which breakdown the complex organic compounds present in dead and decaying matter are called decomposers, example, certain bacteria and fungi.

Decomposers acts as cleaning agents of environment by decomposing the dead bodies of plants and animals. They also help in recycling of materials, replenishment of soil's nutrients etc.

- i) The dead bodies would lead to their accumulation and polluting the environment.
- ii) The elements by which bodies are made would never be returned to the environments.

all the nutrients present in soil, air and water will be exhausted and the life cycle of organisms is disrupted.

Q33. Suggest any four activities in daily life which are eco-friendly.

Answer:

Eco-friendly activities are those activities are beneficial for the environments:

- i) Use of cloth/paper bags in place of polythene/plastic bags.
- ii) Separation of bio-degradable wates and non-biodegradable wastes.
- iii) Using public transport for commuting, walking or cycle for short distance.
- iv) Harvesting rain water.
- v) Switching off light/fans in unoccupied rooms.
- vi) Use of compost and vermicompost in place of fertilisers.

Q34. Give two difference between food chain and food web.

Answer:

S/No.	Food chain	Food web
1.	The phenomenon of transfer of energy through series of organisms falling on successive trophic levels.	It is an interconnection of food chains which shows relation between them.
2.	Usually, member of high trophic level feed upon a single type of organism of lower trophic level.	In food web members of higher trophic level feed upon many organisms of lower trophic levels.
3.	Separate and isolated food chains increase the instability of the ecosystem.	Stability of the ecosystem increases by the presence of complex food webs.
4.	It comprises only one chain.	It comprises of many chains.
5.	Removal of one group of organism disturbs the whole chain.	Removal of one group of organisms not all the disturbs the food web.

Q35. Name the wastes which are generated in your house daily. What measure would you take their disposal?

Answer:

S/No.	Household waste	Measures for disposal
1.	Kitchen waste like bottles, plastic, food etc.	Prepare a compost pit
2.	Paper wastes like newspaper, envelops etc.	Should be recycled
3.	Plastic bags	Should be safety dumped in garbage bins for non-biodegradable wastes
4.	Vegetables/fruit peel/rind	Can be placed near trees/plants, so that on decomposition enrich the soil with nutrients
5.	All other wastes	Segregation into biodegradable and non-biodegradable wastes.

Q36. Suggest suitable mechanism(s) for waste management in fertiliser industries.

Answer:

Effluents and harmful gases are wastes which are produced in a fertiliser factory.

mechanism for waste management is –

- i) For control of gaseous pollutants combustion equipment are used for pollutants which are oxidised. The pollutants are exposed to a high temperature in the process.
Air pollutants like gases and vapour and inflammable compounds are controlled by adsorption equipment's. Adsorption is a surface phenomenon and require the presence of large solid surface area. Toxic and odoriferous compounds are removed.
- ii) Three ways for controlling the effluents –
 - a) Waste water is treated at the factory and reused or discharged directly into waters.
 - b) Control step at generation within the factory.
 - c) Waste water is pre-treated for discharge to municipal treatment systems.

Q37. What are the by-products of fertiliser industries? How do you affect the environment?

Answer:

The by-products of fertilisers industries are pesticides and chemical fertilisers. They are non-biodegradable, so they accumulate at each trophic level, mix up with soil and water and are absorbed by the growing plants with water and minerals.

When herbivores eat plants, poisonous chemicals go into their bodies by food chain. When carnivores eat herbivores, these pesticides transfer to their bodies. Man is omnivore, eats both plants and herbivores.

Thus, pesticides enter the food chain at the producer level and in the process of transfer of food-by-food chains, harmful chemicals get concentrated at each trophic level called bio-magnification.

Q38. Explain some harmful effects of agricultural practices on the environment.

Answer:

- i) Soil degradation: extensive cropping causes loss of soil fertility, lead to soil erosion and finally to desertification.
- ii) Pollution: use of synthetic fertilisers and pesticides cause soil, water and air pollution.
- iii) Water shortage: excess use of ground water for agriculture lowers the water table, which results in acute water shortage.
- iv) Bio-magnification: The chemical pesticides, being non-biodegradable accumulates in organisms in increasing amounts at each trophic level.
- v) Deforestation: indiscriminate cutting of trees for agriculture cause loss of habitat for wildlife, which damage natural ecosystem.