CBSE Test Paper 02

Chapter 15 Our Environment

1. Ozone depletion has resulted in**: (1)**

    a. More UV radiations on earth
    b. Warming of earth
    c. Decrease in temperature
    d. Less UV radiations on earth

2. Which of the following is biodegradable? **(1)**

    a. Polythene
    b. Paper
    c. Aluminum foil
    d. Plastic

3. Which of the following constitutes the fourth trophic level? **(1)**

    a. Small carnivores
    b. Top carnivores
    c. Plants
    d. Herbivores

4. “Flow of energy is unidirectional”. It means that**: (1)**

    a. Energy which passes to the higher trophic levels doesn’t come back to lower trophic levels.
    b. The energy of the autotrophs reaches back to the solar input.
    c. None of these
    d. Energy always flows form east to west direction.

5. Micro-organisms belong to the group of**: (1)**

    a. Decomposers
    b. Consumers

c. None of the above
d. Producers

6. What are the various steps of food chains through which the transfer of food energy takes place is called? **(1)**

7. Rearrange the following according to their trophic levels in a food chain.
   Fish, zooplankton, seal, phytoplankton **(1)**

8. Name the gaseous components of the biosphere. **(1)**

9. Discuss the transfer of energy from sun to carnivores. **(1)**

10. Give one example each of (1) Three step,(2) Four step and(3) Five step food chain. **(3)**

11. Suggest any two methods for reducing the problem of waste disposal. **(3)**

12. How would you dispose the following wastes: **(3)**

    a. Domestic wastes like vegetables peels
    b. Industrial wastes like chemicals
    c. Waste like plastics & metal cans

13. Mention the form of energy transfer, if a grasshopper is eaten by a frog. **(3)**

14. Suggest suitable mechanism(s) for waste management in fertiliser industries. **(5)**

15. Explain the concept of food chain. **(5)**

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Answers

1. a. More UV radiations on earth
   Explanation: Ozone layer shields the surface of the earth from ultraviolet (UV) radiation from the Sun. Ozone depletion has resulted in more UV radiations on earth.
2. b. Paper
   Explanation: Substances that can be broken down by biological processes are said to be biodegradable. Substances like paper, wood and cloth are biodegradable.
3. b. Top carnivores
   Explanation: Plants are producers. The herbivores or the primary consumers come at the second trophic level. Small carnivores or the secondary consumers come at the third trophic level. Larger carnivores or the tertiary consumers form the fourth trophic level.
4. a. Energy which passes to the higher trophic levels doesn't come back to lower trophic levels.
   Explanation: The flow of energy in an ecosystem is always unidirectional. It means that as the energy moves progressively through the various trophic levels, it is no longer available to the previous level. The energy that is captured by the autotrophs (producers) does not revert back to the solar input. The energy which passes to the herbivores (primary consumers) does not come back to the autotrophs (producers).
5. a. Decomposers
   Explanation: Organisms can be grouped as producers, consumers and decomposers according to the manner in which they obtain their sustenance from the environment. Micro-organisms belong to the group of decomposers. They break-down the dead remains and waste products of organisms.
6. Trophic levels

7. A food chain always start with producers followed by primary, secondary and tertiary consumer thus, the food chain will be Phytoplankton, zooplankton, fish, seal.
8. Carbon dioxide, oxygen and nitrogen.
9. The solar energy is trapped by plants (producers) in the form of carbohydrates. It flows in the food chain from herbivores to carnivores and at each level is utilized as mechanical energy. It is also lost as heat into atmosphere. Almost 90% of energy is used up at each trophic level and only 10% is transferred to next level.
10. i. Three step food chain: (in grassland)

$$\underset{(producer)}{Grass/tree} \rightarrow \underset{(herbivore)}{Deer} \rightarrow \underset{(Carnivore)}{Tiger}$$

ii. Four step food chain (in grassland)

$$\underset{(producer)}{Grass} \rightarrow \underset{(herbivore)}{Grass\ hopper} \rightarrow \underset{(Carnivore)}{Frog} \rightarrow \underset{(top\ carnivore)}{snake/eagle}$$

iii. Five step food chai

$$\underset{(producer)}{Grass} \rightarrow \underset{(herbivore)}{Grass\ hopper} \rightarrow \underset{(Carnivore)}{Frog} \rightarrow \underset{(Carnivore)}{Snake} \rightarrow \underset{(top\ carnivore)}{Eagle}$$

11. The amount of waste for disposal can be reduced by:
    a. Separation of biodegradable and non-biodegradable waste at source.
    b. Decomposing the bio degradable waste & producing manure or bio-gas from it.
    c. Recycling non biodegradable waste like plastic, metal cans etc.
12. a. Domestic wastes like vegetables peels should be disposed off in a pit & allowed to decompose to get manure.
    b. Industrial wastes should be treated first to remove poisonous salts or chemicals and disposed off in water resources like river.
    c. Waste like plastics & metal cans can be recycled & reused.
13. In a food chain, if a grasshopper is eaten by a frog, then the energy transfer will be between primary consumer and secondary consumer.
    Grasshopper feeds on producers, i.e. the grass and plants which starts the food chain. So, it occupies the level of primary consumer and stores energy in the form of biomass which is taken up by frog by eating grasshopper thus frog becomes the secondary consumer.
14. **Effluents** and **harmful gases** are the main wastes, which are produced in a fertiliser factory. Suitable mechanism for waste management are:
    i. For the control of gaseous pollutants combustion equipments are used which can

be oxidised. The pollutants are exposed to a high temperature in the process. Air pollutants, such as certain gases and vapour and inflammable compounds are controlled through the use of adsorption equipments. Adsorption is a surface phenomenon that needs the presence of a large solid surface area. Toxic and odoriferous compounds are efficiently removed by this process.

ii. Three options available for controlling the effluents are:
    a. Control can take place at the point of generation within the factory.
    b. Waste water can be pre-treated for discharge to municipal treatment systems.
    c. Waste water can be treated completely in a factory and either reused or discharged directly for receiving water.

15. Food chain: A food chain consists of a connected group of producers, consumers and decomposers. It starts with energy from the sun and nutrients from the soil. They pass through a plant and one or several consumers to final consumer that is not fed upon by other. Even then one may have parasites, and in time it will certainly die. The food relation in simplest from grass-deer-tiger-micro-organisms representing a producer, primary consumer, a secondary consumer and decomposer is called a food chain. A common example of food chain is that involving the plants and grazing antelopes. The plants are producers and the antelope being herbivorous are primary consumers. The antelopes in turn are consumed as food by carnivorous animals, such as lion and cheetah. They constitute a group called secondary consumer. They eat upto their fill but do not completely consume the antelopes. The tertiary consumers, the scavenging vultures, then feed on the remains. After they finish, the bones may be crushed by jackals and hyenas. Still there is sufficient nutrient to attract a large number of insects. Finally whatever is left may be decomposed by bacteria and fungi, thus return the simple components to soil. The last group constitute the decomposers. Green plants are the producers, mouse is the primary consumer and kite is tertiary consumer. Thus a food chain is set up.