CBSE Test Paper 03

Chapter 15 Our Environment

1. The decomposers in an ecosystem**: (1)**
   a. Do not breakdown organic compounds
   b. Convert inorganic material to simpler forms
   c. Convert organic material to inorganic forms
   d. Convert inorganic materials into organic compounds
2. The number of trophic levels in a food chain are**: (1)**
   a. Two to three
   b. Three to four
   c. Four to five
   d. Unlimited
3. Ozone layer is mainly damaged by**: (1)**
   a. Carbon dioxide
   b. CFCs
   c. Methane
   d. Sulphur dioxide
4. “Nitrous oxide is a green house gas”. The above statement is**: (1)**
   a. True
   b. Partially false
   c. False
   d. Partially true
5. Which of the following constitutes a food chain? (**1)**
   a. Grass, wheat and mango
   b. Grass, goat and human
   c. Grass, fish and goat
   d. Goat, cow and elephant
6. Which of the following belongs to the first trophic level? Grasshopper rose plant, cockroach, vulture, neem plant. **(1)**

7. Write a fresh water food chain. **(1)**

8. Would you eat animals or plants to get more calories of heat? **(1)**

9. Which of the following belong to the same trophic level: Grasshopper, Spider, Grass, Hawk, and Lizard? **(1)**

10. In an ecosystem, how the biotic and abiotic components are dependent on each other? **(3)**

11. What is meant by non-biodegradable waste? Identify biodegradable waste from the following.
    Empty packet of chips, empty plastic bottle of mineral water, empty paper box of sweets, empty tin of cold drink. **(3)**

12. Give scientific terms for the following- **(3)**

    i. The process of eating and being eaten.
    ii. The relationship between abiotic and biotic component.
    iii. Increasing concentration of a non biodegradable substance, such as a toxic chemical, in the tissues of organisms at successively higher levels in a food chain.

13. We do not clean ponds or lakes, but an aquarium needs to be cleaned. Why? **(3)**

14. What are the functions of ecosystem? **(5)**

15. i. How do food chains get shortened? How does the shortening of food chain affect the biosphere?
    ii. How will you justify that vegetarian food habits give us more calories? **(5)**

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Answers

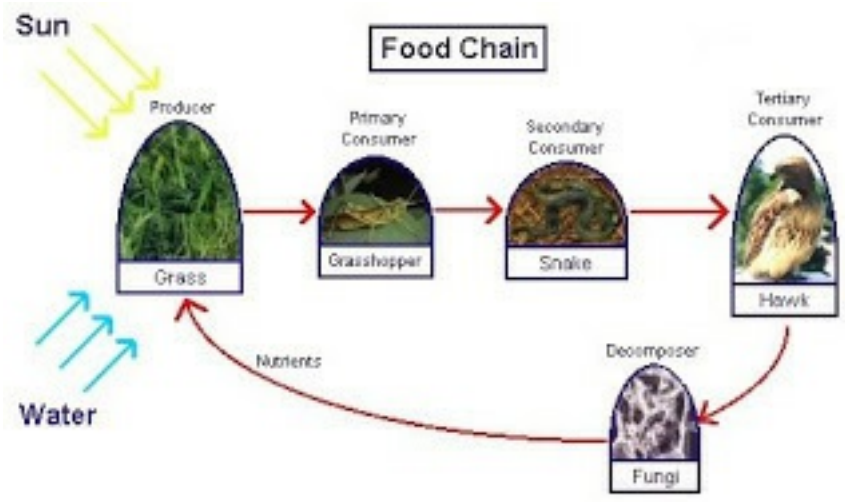
1. c. Convert organic material to inorganic forms
   Explanation: The decomposers in an ecosystem are microorganisms, comprising bacteria and fungi. They break down the complex organic substances (dead remains and waste products of organisms) into simple inorganic substances, which go into the soil and are used up once more by the plants.
2. b. Three to four
   Explanation: There is a loss of energy as the energy is transferred from a lower trophic level to a higher trophic level; this limits the number of trophic levels in a food-chain. The food chains generally consist of only three or four steps since very little usable energy remains after four trophic levels.
3. b. CFCs
   Explanation: The use of chemicals like CFCs has endangered the ozone layer. The decrease in the amount of ozone in earth's atmosphere has been linked to synthetic chemicals like chlorofluorocarbons (CFCs). CFCs are used as refrigerants and in fire extinguishers.
4. a. True
   Explanation: Nitrous oxide occurs in small amounts in the atmosphere, but has been found to be a major scavenger of stratospheric ozone, with an impact comparable to that of the CFCs. According to an estimation, 30% of the N_2O in the atmosphere is the result of human activity, chiefly agriculture. It also has a significant global warming potential as a greenhouse gas.
5. b. Grass, goat and human
   Explanation: The following chain constitutes a food chain (organisms in order of who eats whom); a food chain always starts with photosynthesis. Grass is at the first trophic level. Grass fixes up the solar energy and makes it available for the consumers - Goat and Humans. Goat - a consumer - cannot occupy the first trophic level.
   Grass $\rightarrow$ Goat $\rightarrow$ Human
6. Rose plant and neem plant as both of them are producers and a food chain always start

with producers which form the first trophic level.

7. Phytoplankton → Zooplankton→ Small fish → Large fish
8. We should eat plants to get more calories of heat.
9. Grasshoppers and Spider belong to the same trophic level i.e. second trophic level.
10. All living organisms not only interact with each other but also with their environment. Their growth, reproduction and other activities are affected by temperature, water, humidity, etc., which constitutes abiotic components. Even their body structure and needs depend upon the surroundings. Hence, biotic and abiotic components are dependent on each other.
11. Substances that cannot be broken down into simpler substances by the action of microorganisms are called non-biodegradable. They stay in environment for years and cause pollution
    From the list, empty paper box of sweets is biodegradable
12. i. Food chain
    ii. Ecosystem
    iii. Bio-magnification
13. An aquarium is an artificial and incomplete ecosystem in contrast to a pond/lake which are natural, self-sustaining and complete ecosystems. Ponds and lakes have their own cleaning mechanisms because of presence of various microorganisms but Aquarium lacks decomposer microbes which convert the complex organic compounds of dead organisms into simple substances that can be reused by plants. Hence the dead fishes of the aquarium are not decomposed. so it needs regular cleaning.
14. Functions of ecosystem. Ecosystem possess a natural tendency to persist. This is made possible by a variety of functions (activities undertaken to ensure persistence) performed by the structural components. For instance, green leaves function as sites of food production, and roots absorb nutrients from the soil. Herbivores perform the function of utilizing part of the plant production, and in turn serve as food for carnivores. Decomposers carry out the function of breaking down complex organic materials into simpler inorganic products which can be used by the producers. These functions are carried out in the ecosystem through delicately balanced and controlled processes. For example, the process of photosynthesis is involved in food production, and that of decomposition leads to release of nutrients contained in the organic matter.
    The key functional aspects of the ecosystem are:

i. Productivity and energy flow
ii. Nutrient cycling
iii. Development and stabilization

15. i. Undesirable activities of man eliminate the growth of organisms belonging to one or more trophic levels in a food chain. Thus, Food chains gets shortened.
For example:
i. Hunting tigers for their skin
ii. Plants$\rightarrow$Deer$\rightarrow$Tiger
iii. Deforestation
If man cuts down the trees for their commercial needs then deers which are dependent on trees get less food and also less amount of oxygen will released in the atmosphere where all living organism are dependent on O_2. If deers become less in number due to lack of food, tiger become less in number . Thus the indirect activities of human beings leads to imbalance in ecosystem and biosphere. If organisms of one trophic level are eliminated, the organisms prior to that trophic level will flourish and increase in number and also the organisms of the subsequent trophic level will sharply decrease, therby creating an imbalance.



ii. Vegetarian food chain is advantageous in terms of energy because it has less number of trophic levels. As we know, only 10% of the energy is transferred to the next trophic level in a food chain, so if a person is vegetarian then, he would have maximum amount of energy by consuming producers or plants in a food chain. Vegetarian food chain gives ten times more energy than the non-vegetarian food chain.