THE VILLAGE INTERNATIONAL SCHOOL
"We Nurture Dreams"

**BIOLOGY QUESTION BANK - 1**

**CLASS: X Chapter 15: Our Environment**

1. Name any two groups of producers.
   Ans. Plants and blue-green algae.
2. Name two decomposers.
   Ans. Bacteria and fungi
3. Write the two raw materials for making food, used by living organisms of first tropic level.
   Ans. $CO_2$ and Water
4. Which component of sunlight is used for the formation of ozone?
   Ans. Ultra violet radiation.
5. Name 4 abiotic components of any ecosystem.
   Ans. Temperature, rainfall, wind, soil.
6. Name two natural ecosystem.
   Ans. Pond ecosystem and forest ecosystem.
7. Name two artificial ecosystem.
   Ans. Garden and crop-field.
8. What are consumers in the food chain?
   Ans. Those organisms which consume the food produced either directly from producers or indirectly by feeding on other organisms are called consumers.
9. Name the natural cleansing agent in an ecosystem.
   Ans. Decomposers, scavengers
10. Expand UNEP
    Ans. United Nations Environment Programme.
11. Define biological magnification.
    Ans. The accumulation of chemicals in the bodies of the organism that belongs to the top most tropic level is called biological magnification.
12. What is bad Ozone?
    Ans. Ozone at ground level is deadly poisonous and is called as bad Ozone.
13. Why should biodegradable and non-biodegradable wastes be discarded in two separate dustbins?
    Ans: Biodegradable materials are broken down by microorganisms in nature into simple harmless substances. Non-biodegradable materials need a different treatment like heat and temperature and hence these should be discarded in separate bins.
14. Select two non-biodegradable substances from the following wastes generated in a kitchen: spoilt food, paper bags, milk bags, vegetable peels, tin cans, used tea leaves.
    Ans: Milk bags and tin cans.
15. How is the increase in demand for energy affecting our environment adversely?
    Ans: The increase in demand for energy affects our environment adversely by releasing pollutants like CO, $CO_2$, $SO_2$, etc. which leads to greenhouse effect.
16. List two biotic components of a biosphere.
    Ans: Two biotic components of a biosphere are plants and animals.
17. Why are green plants called producers?
    Ans: Green plants can produce their own food by photosynthesis from inorganic compounds and hence are called producers.
18. The depletion of ozone layer is a cause of concern. Why?
    Ans: If ozone layer is depleted harmful UV rays from sun will reach the earth. This radiation is highly damaging to organisms which also cause skin cancer in human beings.
19. We often use the word environment. What does it mean?
    Ans: It is the sum total of all external conditions and influences that affect the life and development of an organism, i.e. the environment includes all the physical or abiotic and biological or biotic factors.

20. 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?
    Ans: 100 Joules of energy will be available to the organism of the 2nd trophic level.
21. The first trophic level in a food chain is always a green plant. Why?
    Ans: Only green plants can make their own food from sunlight. Green plants therefore, always occupy the 1st trophic level in a food chain.
22. 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 highest concentration of non-biodegradable chemicals. The phenomenon is called biomagnification.
23. List two criteria of measuring the biodiversity of an area.
    Ans: One measure of the biodiversity of an area is the number of species found there. Secondly, the range of different life forms is also important.
24. Bacteria and fungi are called decomposers. Why?
    Ans: Bacteria and fungi are called 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.
25. Consider the following food chain which occurs in a forest: Grass → Deer → Lion. If 10000 J of solar energy is available to the grass, how much energy would be available to the deer to transfer it to the lion?
    Ans: 10 J energy will be available to deer to transfer it to lion.
26. 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 the organisms in 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.
    (iii) It will cause an ecological imbalance in the food chain.
27. Define 'trophic level'.
    Ans: Trophic level is the position that an organism occupies in a food chain, where transfer of food or energy takes place.
28. Give an example to illustrate that indiscriminate use of pesticides may result in the degradation of the environment.
    Ans: The pesticides used in crop field are washed down into the water bodies. From water bodies, these are absorbed by the aquatic plants and animals of a food chain and thereby degrades the environment.
29. 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.
    Ans: The average percentage of energy lost when plants are eaten by primary consumers is 90 %.
30. What is the function of ozone in the upper atmosphere?
    Ans: Ozone protects the earth from harmful radiations like high energy UV rays.
31. Depletion of ozone in the ozone layer is a cause for our worry. Why?
    Ans: If ozone layer is depleted, harmful UV rays from the sun will reach the earth. These radiations are highly damaging to the organisms which also causes skin cancer in human being. What happens when high energy ultraviolet radiations act on the oxygen at the higher level of the atmosphere?

    (or)

    How is ozone formed in the upper part of the atmosphere of the Earth?

    Ans:

    $$O_2 \xrightarrow{UV} O + O$$
    $$O_2 + O \longrightarrow O_3$$
    Ozone

32. Why did United Nations act to control the production of chlorofluorocarbons (CFCs) used in refrigerators?
    Ans: CFCs depletes the ozone layer around the earth, hence its production is controlled by United Nations.
33. Which disease is caused in human beings due to depletion of ozone layer in the atmosphere?
    Ans: Skin cancer is caused in human beings due to a depletion of ozone layer in the atmosphere.

SHORT ANSWER TYPE QUESTIONS (2 or 3 Marks)

34. Why is plastic bag called non-biodegradable while paper is not?
    Ans. Plastic bag is not acted upon by decomposers as it cannot be broken down into simple components, so it is called non-biodegradable while paper gets decomposed.
35. Differentiate between natural and artificial ecosystem.

| Natural ecosystem | Artificial ecosystem |
|---|---|
| Naturally occurring ecosystem. *E.g.*, pond, grassland, forest | These are man-made ecosystem. *E.g.*, garden, aquarium, crop-field. |

36. Pesticides are useful to farmers yet considered as pollutants. Give reasons.
    Ans. Pesticides kill insects and pests thereby protecting the crops but these pesticides remain on the crops which enter the food chain and gets accumulated in the organisms and reaches the top most trophic level that causes diseases. When washed away by rain, it causes pollution of water.
37. Why decomposers are necessary in environment?
    Ans. Decomposers act on all biodegradable substances and break them into simple inorganic materials and maintain the balance of materials in the ecosystem and cleanse the environment.
38. Give one advantage and one disadvantage of Ozone.
    Ans. Advantage of Ozone–When it is in the stratosphere it does not allow the ultraviolet radiations to reach the earth, as UV radiations cause skin cancer and cataract. Disadvantage of ozone: On ground level ozone is poisonous gas.
39. Give one example of grassland ecosystem and one example of pond ecosystem.
    Ans. Grass land Ecosystem: Grass → grasshopper → frog → snake → peacock.
    Pond Ecosystem : Blue-green algae → small fish → big fish → birds
40. Energy flow in a food chain is unidirectional. Explain.
    Ans. The energy from the sun flows into autotrophs and it passes to herbivores and then to carnivores. The energy does not revert from autotrophs to the solar input or from herbivores back to autotrophs. Hence the flow is unidirectional.
41. State different types of consumers in an ecosystem.
    Ans. The consumers are herbivores, carnivores, omnivores, parasites, saprophytes and decomposers.
42. Differentiate between biodegradable and non biodegradable substances.
    Ans. Biodegradable: These substances can be broken down by the action of saprotrophs and other agents, e.g., paper, cloth. Non biodegradable: These substances cannot be broken down by the action of saprotrophs, e.g., glass, plastics.
43. Define an ecosystem. Explain in detail about its various components.
    Ans. Ecosystem is defined as a well defined unit or area in an environment where biotic and abiotic components interact with each other to maintain balance in nature.
    Biotic components – producers, consumers, saprotrophs.
    Abiotic components – air, water, sunlight.
44. What is a food chain? List its characteristics features.
    Ans. Food chain is defined as the phenomenon of transfer of energy through series of organisms falling on successive trophic levels. Example: sun is the ultimate source of energy. Producers or green plants photosynthesize and utilize solar energy. Thereafter the energy is transferred to other successive levels.
    Food chain can be depicted as follows: Plants → grasshopper → frog → snake → decomposers
45. Minimum energy is available at highest trophic level while maximum energy is at lowest level. Explain.
    Ans. Since non-biodegradable substances cannot be broken down into simpler forms hence they keep on accumulating in nature causing ecological imbalance.
46. What is biological magnification?
    Ans. The accumulation of chemicals in the bodies of the organism that belongs to the top most tropic level is called biological magnification. As human beings occupy highest trophic level its maximum concentration was found in human beings only, which resulted in neurological disorders due to damaging of CNS (Central Nervous System).

47. How is ozone layer important to us?
Ans. Ozone is a pollutant at lower level of atmosphere but is very useful in shielding harmful UV rays. This layer is present in the stratosphere. In absence of ozone layer heavy damage to organism may occur. e.g. skin cancer, cataract etc.
48. What is causing the damage to ozone layer?
Ans. The CFC emission due to various industrial activities has caused damage to the Ozone layer and has contributed to global warming by allowing a major portion of UV rays to reach the earth's atmosphere through ozone holes.
49. What are the problems caused by the non-biodegradable waste that we generate?
Ans. Non-biodegradable waste doesn't decompose under the action of bacteria and other microorganisms.
    - When these substances, e.g., polythene, plastics are buried under soil render that area barren and leads to soil pollution.
    - These wastes don't burn completely in presence of oxygen and release toxic gases which causes air pollution.
    - The substances may be harmful on accumulating in food chain like DDT due to biomagnification.
50. Why is damage to ozone layer a cause for concern? What steps are being taken to limit this damage?
Ans. Ozone layer doesn't allow harmful ultra violet rays of the sun to reach the earth's surface. In order to stop further depletion of ozone layer we must scale down the use of CFC's in form of aerosols, refrigerants etc and check their release in the atmosphere. Moreover stress should be laid on using eco-friendly techniques and proper disposal of toxic material.
51. Why are bacteria and fungi called decomposers? List any two advantages of decomposers to the environment.
Ans. Bacteria and fungi are called decomposers as they break down the dead remains and waste of organisms. They convert the organic complex substance into simple inorganic substances that go into the soil and are used up by plants.
Two advantages of decomposers:
    1. They return the components back to nature and creates balance in the environment.
    2. They act as cleansing agents of the atmosphere.
52. (a) Distinguish between producers and decomposers.
(b) Classify the following as producers and decomposers.
Green plants, bacteria, fungi, blue-green algae.

| Producers | Decomposers |
|---|---|
| 1. Producers convert simple inorganic substances into complex organic substances | Decomposers break the complex organic substances into simple inorganic substances. |
| 2. Producers are autotrophs that can prepare food with $CO_2$, $H_2O$, chlorophyll and sunlight *e.g.*, green plants. | Decomposers decompose the complex substances present in the plants, animals *e.g.*, bacteria, fungi. |

53. Why is the ozone layer getting depleted at the higher levels of the atmosphere?
Ans. Ozone is present at higher levels of the atmosphere where CFC – Cholorofluorocarbons reach, chlorine separates and acts on O3 to split it into O2 and (O). The conditions required to do this are available at higher levels i.e., clouds and sunlight.
54. Name any two abiotic components of an environment.
Ans. Water, air.
55. What are the two main components of our environment?
Ans. Biotic (living components) —→ Plants, animals
Abiotic (non-living components) —→ Water, air
56. Which compounds are responsible for the depletion of ozone layer?
Ans. Chlorofluorocarbons (CFC)
57. Why are green plants called producers?
Ans. Green plants can prepare complex organic matter as food from simple inorganic substances like CO2, H2O in presence of sunlight and chlorophyll. They produce food and hence called producers.
58. Which disease is caused in human beings due to depletion of ozone layer in the atmosphere?
Ans. Skin cancer, cataract.