Short Answer Type Questions – I

[2 Marks]

Q. 1. What are the harmful effects of ozone?

Ans. Inhaling ozone causes dryness of mucous membrane of the mouth, nose and throat; it changes visual activity; causes headache and pulmonary congestion. It even harms leafy vegetables, field crops, fruits and forest trees.

Q. 2. There is mass mortality of fishes in a pond. What may be the reasons?

Ans. (i) Addition of hot water.

(ii) Addition of poisonous (mercury) compounds in water.

(iii) Blockage of gills of fishes with any pollutant.

Q. 3. Write the major uses of oxygen.

Ans. The major uses of oxygen are:

(i) It is necessary for respiration in the living beings.

(ii) Oxygen is essential for combustion, i. e., burning.

Q. 4. How is carbon dioxide fixed?

Ans. **(i)** Green plants convert CO_2 into glucose in the presence of sunlight by the process of photosynthesis.

(ii) Many marine animals use carbonates dissolved in sea water to make their cell.

Q. 5. All the living organisms are basically made up of C, N, S, P, H and O. How do they enter the living forms? Discuss.

Ans. Plants take up C and H by the process of photosynthesis and the rest of the minerals are absorbed from the soil. Consumers take in O and H by the process of respiration and the rest of the minerals are taken via food.

Q. 6. Why does the percentage of gases like oxygen, nitrogen and carbon dioxide remain almost the same in the atmosphere?

Ans. Cycling of these gases maintains consistency of these gases. These are taken up and released by almost every living organism and thus their concentration in the atmosphere is maintained.

Q. 7. Justify "Dust is a pollutant".

Ans. Dust is present in air as suspended particles. It can cause allergy and other respiratory diseases. It also affects plant growth by covering stomata on leaf surface

and blocking them. It acts as the carrier of toxic compounds like heavy metals. Thus, dust acts as a pollutant.

Q. 8. What causes acid rain?

Ans. The burning of fossil fuels like coal and petroleum produces oxides of nitrogen and Sulphur which reach the atmosphere. When they dissolve in rain, they form nitric acid and sulphuric acid and fall as acid rain.

Q. 9. What is smog?

Ans. The suspended particles like unburnt carbon particles and hydrocarbons mix with smoke and fog in the atmosphere, especially in the cold weather to form smog which results in a lowered visibility.

Q. 10. How is ozone layer useful to us?

Ans. Ozone is present in the upper layers of the atmosphere (stratosphere). Before reaching the Earth, the sunrays pass through the stratosphere. The ozone layer present there absorbs the harmful UV rays present in the sunrays and prevent them from reaching the Earth. Thus, it protects the entire planet from disastrous effects of UV rays.

Q. 11. Why is it said that nitrogen is very important for us?

Ans. Nitrogen is the most abundant gas in our atmosphere. In fact it makes up 78% of our atmosphere and is also a part of many molecules essential to life like proteins, nucleic acids (DNA and RNA) and some vitamins, Moreover, it is found in other biologically important compounds such as alkaloids and urea. Thus, nitrogen is very important for us.

Q. 12. How is a balance maintained in the environment?

Ans. The living or biotic components (plants and animals) and the non-living or physical components (air, water, soil, light and temperature) interact and affect each other, resulting in the establishment of a complex and complete balance in the environment. There is a continuous cycle of nutrients among the biotic and abiotic components.

Q. 13. What are the two main sources of air pollution?

Ans. (i) Fixed sources: These are fixed or located at specific sites, like industrial units, electric power plants, etc.

(ii) Mobile sources: These include the vehicles and different modes of transport using fossil fuels.

Q. 14. Write the major uses of water.

Ans. water is used

(i) for drinking and cooking,

(ii) for bathing and washing clothes,

(iii) for irrigation, and

(iv) in industries.

Q. 15. Why does water need conservation even though large oceans surround the land masses?

Ans. Marine water is not useful for human and plant life directly due to high salt content. Uneven distribution of limited freshwater resources need conservation to cater to the demands.

Q. 16. What are aerosols?

Ans. They are certain chemicals like fluorocarbons, released in the air either naturally or by human activities in the form of mist or vapour. Fluorocarbons, which deplete the ozone layer on the atmosphere, are emitted by jet aeroplanes in the form of aerosols.

Q. 17. What are the factors determining the soil type?

Ans. The soil type depends on the following factors:

(i) Size of the soil particles.

(ii) Amount of humus.

(iii) Microorganisms present in the soil.

Q. 18. What makes the biosphere dynamic but stable system?

Ans. A constant interaction between biotic and abiotic components of biosphere makes it dynamic and stable. Interaction consists of transfer of matter and energy between different components of biosphere.

Q. 19. Explain the role of the Sun in the formation of soil.

Ans. During the daytime, the rocks are heated up by the Sun and thus they expand. Whereas, at night they cool down and thus contract. Since all parts of the rock do not expand and contract at the same rate, it results in cracking of rocks, breaking them into smaller pieces.

Q. 20. How do fossil fuels cause air pollution?

Ans. The combustion of fossil fuels like coal, petroleum, etc., not only produces energy but also produces oxides of nitrogen and sulphur like carbon monoxide, sulphur dioxide,

oxides of nitrogen as well as smoke particles. These gases accumulate in the atmosphere and leads to inhalation problems, acid rains, and increase in the amount of suspended particles in the air.

Q. 21. What would happen if the Sun heated the Earth's surface equally everywhere?

Ans. If the Sun heated the Earth's surface equally there would be no pressure difference and thus no movement of air. This would ultimately result in an increased surface temperature.

Q. 22. What do you mean by biological nitrogen fixation?

Ans. Biological nitrogen fixation means the conversion of atmospheric nitrogen into useful nitrogen compounds by bacteria and algae. The bacteria present in the root nodules of leguminous plants like Rhizobium as well as some blue green algae help in the fixation of atmospheric nitrogen.

Q. 23. The flow of energy is unidirectional whereas the biogeochemical transfer is cyclic. Why is it so?

Ans. A large amount of energy is always lost into the atmosphere during its transfer from one level to another. This lost energy cannot be replenished from the atmosphere. Thus, the energy flow is unidirectional. On the other hand, the biogeochemical substances are never lost in the biogeochemical cycle. They are only recycled.

Q. 24. Justify the statement 'The nitrogen cycle is supposed to be an ideal cycle in the biosphere'.

Ans. The nitrogen cycle is said to be an ideal cycle in the biosphere because the amount of nitrogen remains constant throughout the entire cycle and no nitrogen is lost. Hence, it follows the law of conservation of matter. In the other cycles of biosphere there is either loss of energy or loss of matter.

Q. 25. Why are oceans salty?

Ans. As water flows through rivers, it dissolves small amounts of mineral salts from the rocks and soil of the river beds. This very salty water flows into the oceans and seas. Continuous evaporation of water from the oceans and seas (and freezing of polar ice) results in the increased concentration of minerals in sea water. Thus, the remaining water gets rather saltier as time passes.

Q. 26. Carbon dioxide is necessary for plants. Why do we consider it as a pollutant?

Ans. Plants require CO_2 in an optimum amount for the process of photosynthesis. But, high concentration of (more than normal) CO_2 is harmful and considered as a pollutant. Higher concentration of CO_2 is one of the causes of greenhouse effect and global warming as it absorbs the infrared radiations thus increasing the temperature of Earth. This leads to many environmental problems.

Q. 27. Rivers from land add minerals to sea water. Discuss how.

Ans. Water is capable of dissolving a large number of substances. As water flows over the rocks containing soluble minerals, some of them get dissolved in the water. Thus, rivers carry many nutrients from land to the sea.

Q. 28. Following are a few organisms

(a) lichen **(b) mosses**

(c) mango tree **(d) cactus**

Which among the above can grow on stones and also help in formation of soil? Write the mode of their action for making soil.

Ans. Lichens and mosses grow on rocks. Lichens and mosses release chemical substances which break down the stones resulting in the formation of soil.