Short Answer Type Questions – II

[3 marks]

Q. 1. Why does life not exist on Venus and Mars while it exists on Earth?

Ans. The major component of the atmosphere on Venus and Mars is carbon dioxide. In fact, CO_2 constitutes up to 95-97% of the atmosphere on these planets. So, no life is known to exit on these planets as O_2 is necessary for maintaining life. On the other hand, the atmosphere on Earth has life supporting gases like nitrogen, oxygen, CO_2 and water vapour. Apart from that, water is also present only on Earth.

Q. 2. Why is carbon dioxide produced in large extents?

Ans. We all need oxygen to break down glucose molecules and get energy for all our activities. During glucose breakdown, carbon dioxide is released. Moreover, a lot of carbon dioxide is produced during combustion of various industrial and other human activities. Forest fires also produce a lot of carbon dioxide. Combustion in vehicles contribute a large amount of carbon dioxide to the atmosphere.

Q. 3. In coastal area, wind current moves from the sea towards the land during day but during night it moves from land to the sea. Discuss the reason.

Ans. Air moves from a region of high pressure to a region of low pressure. Air above the land gets heated quickly during day and starts rising. This creates a region of low pressure as a result of which air above the sea rushes into this area of low pressure. This movement of air from one region to other creates winds. During night, as water cools down slowly, the air above water is warmer than the air on land. So, air moves from land to sea creating winds.

Q. 4. Name the major industrial air pollutants.

Ans. The major industrial air pollutants are:

(i) SO_2, CO_2, oxides of nitrogen	(ii) H_2
(iii) Fumes of acids	(iv) Dust
(v) Particles of unburnt hydrocarbons	(vi) Lead
(vii) Asbestos	(viii) Cement

Q. 5. Name the properties of potable drinking water.

Ans. **(i)** It should be clear and colourless.

(ii) It must not be foul-smelling.

(iii) It must have sufficient amount of oxygen dissolved in it.

(iv) It should be free from harmful microorganisms.

(v) It must also be free from various chemical pollutants that are injurious to our health.

Q. 6. What methods should be employed for conserving water resources?

Ans. (i) Careful and economical use of water.

(ii) Artificial recharging of groundwater.

(iii) Dams should be built for storage of flood water.

(iv) Rainwater harvesting.

Q. 7. How can the water released from dams affect the aquatic life?

Ans. Like all lifeforms, aquatic organisms also survive within a certain temperature range only. The water in the deep reaches of the dams is cooler than water at the surface. When it is released suddenly in water bodies, the temperature of the water there is reduced significantly, which is very dangerous for aquatic organisms and may affect their breeding. The eggs and larvae of various aquatic animals are highly susceptible to temperature changes.

Q. 8. How is the life of organisms living in water affected when water gets polluted?

Ans. Addition of undesirable chemicals like pesticides, fertilisers, industrial wastes and domestic wastes not only kill the aquatic organisms, they also cause water- borne diseases. With the addition of pollutants, the phytoplankton and other organisms require more oxygen for their degradation, thus decreasing the amount of oxygen available in water. Due to this reduction in the dissolved oxygen in water, there are adverse effects on the aquatic organisms leading to their deaths.

Q. 9. Enlist the main causes of soil erosion.

Ans. The main causes of soil erosion are:

(i) deforestation;

(ii) excessive overgrazing;

(iii) urbanisation; and

(iv) leaving the land uncultivated for a long time.

Q. 10. Why is replenishment of soil essential? Describe two natural ways of soil replenishment.

Ans. Some nutrients of the soil get depleted by growing the same crop year after year. So, replenishment of the soil is essential to keep it fit for further cultivation.
Two natural ways of soil replenishment are:

(i) Crop rotation, and

(ii) Leaving the agricultural land uncultivated for one or two seasons so as to allow it to regain its fertility.

Q. 11. “Soil is formed by water." If you agree to this statement then give reasons for your answer.

Ans. Water helps in formation of soil in the following ways:

(i) Water wears off the rocks over a long period of time.

(ii) Small rocks in the flowing water rub against other rocks creating small particles which are carried away downstream and deposited as soil.

(iii) Water expands on freezing. So when it is deposited in crevices of rocks, rocks crack into smaller pieces.

Q. 12. What is the role of plants in controlling air pollution?

Ans. There is a balance between the CO_2 which occurs at the Earth's surface, CO_2 dissolved in oceans, and that found in marine and terrestrial sediments. The burning of fossil fuels increases the amount of CO_2 in the atmosphere causing air pollution. Plants control air pollution because during the process of photosynthesis, they take in CO_2 from the atmosphere and in turn release O_2 Thus, decreasing the level of CO_2 in the atmosphere.

Q. 13. What is photochemical smog and what are its effects?

Ans. Oxides of nitrogen combine chemically in sunlight and produce hydrocarbons, peroxyacetal nitrate (PAN), and ozone which are commonly known as photochemical smog. This is very harmful and makes eyes watery, affects the growth of plants by checking the rate of photosynthesis and increases the rate of transpiration.

Q. 14. Describe the major factors which lead to water pollution. Give examples.

Ans. The following are the major factors which lead to water pollution:

(i) The addition of undesirable substances to water bodies. For example, addition of industrial wastes containing poisonous salts like pesticides, insecticides, etc. are fatal for aquatic life.

(ii) The removal of desirable substances from water bodies. For example, depletion of dissolved oxygen and nutrients has adverse effects on aquatic life.

(iii) Change in temperature of water in the water bodies. The aquatic animals are adapted to live under certain temperature range. A sudden change of temperature may affect breeding of aquatic animals, their eggs and larvae, etc. For example, pouring of water at very high temperature from nuclear reactors may cause death of fishes and aquatic animals. Similarly, pouring cold water from dams also affects aquatic life adversely.

Q. 15. What are the harmful effects of water pollution?

Ans. (i) Polluted water causes a number of water-borne diseases like cholera, typhoid, jaundice, diarrhoea, hepatitis and dysentery.

(ii) Presence of acids or alkalies in water destroys certain microorganisms, which carry out the self-purification process in rivers.

(iii) Decrease in the amount of dissolved oxygen in the water body adversely affects the life of aquatic organisms.

(iv) Change in water temperature disturbs the aquatic life as eggs and larvae of various animals are badly affected by such changes.

Q. 16. Give the names of a few organisms that help in nitrogen fixation.

Ans. (i) *Rhizobium* helps in the fixation of atmospheric nitrogen into ammonia.

(ii) *Nitrosomonas* converts ammonia to nitrates

(iii) *Nitrobactor* converts nitrites into nitrates.

Q. 17. How are CFCs harmful for the environment and living beings?

Ans. CFCs contain both chlorine and fluorine. CFCs are very stable and do not get degraded by any natural process. In the ozone layer present in the outer region of the atmosphere (25-40 km above sea level), CFCs are dissociated by ultraviolet light to release free chlorine atoms. Free chlorine atoms catalyse the breakdown of ozone molecules (O_3) into oxygen. This results in degradation of the ozone layer. Thinning of the ozone layer would allow penetration of ultraviolet light into Earth's atmosphere causing blindness, skin cancer and mutations.

Q. 18. What will be the consequences of global warming?

Ans. An increase in global temperatures can cause:

(i)change in the amount and pattern of precipitation, i.e., rain, snow, etc.

(ii) melting of polar ice and rise of sea level,

(iii) extreme weather conditions like floods, droughts, heat wave, hurricanes and tornadoes, etc.

Q. 19. Why is the circulation of carbon in nature important?

Ans. The carbon in the form of food travels to animals from plants through food chains. In atmosphere the concentration of carbon dioxide is very low - only about 0.03% to 0.04%. Therefore, if carbon dioxide is not circulated back to our nutrient pool, there will be shortage of CO_2 and plants will not be able to carry out photosynthesis and the whole cycle will be disrupted. Combustion of fuel also adds carbon dioxide in the atmosphere. Carbon thus cycles through physical and biological activities.