Unit: Environmental Pollution:

Part -I

Important Questions with Answers

1. What do you mean by environment?

Answer: Environment is defined as the sum total of physical and biological factors that directly influence the survival, growth, development and reproduction of organisms.

2. What is pollutant? What are their types?

Answer: A substance present in the environment in greater proportion than its normal abundance and resulting in harmful or detrimental effect on the quality of environment is called a pollutant.

Pollutants are different types. They are- solid pollutants, liquid pollutants and gaseous pollutants.

3. What is threshold limit value (TLV)? What are the TLV of CO_2, CO, SO_2, NO and NO_2

Answer: It is the minimum permissible average concentration limit of a toxic pollutant under which a worker can work safely for 40 hours in a week.

Pollutant	TLV
CO_2	5000 ppm
CO	50 ppm
SO_2	5 ppm
NO	25 ppm
NO_2	5 ppm

4. What is meant by primary pollutant and secondary pollutant?

Answer: A harmful chemical substance that directly enters the environment due to natural human activities is called primary pollutant. E.g. CO, NO, SO_2, etc.

A Harmful chemical substance that gets formed in the environment due to chemical reactions between primary pollutant and a component of the atmosphere is called secondary pollutant. E.g. SO_3, which is formed by the reaction of O_2 with SO_2.

5. What are biodegradable and on-biodegradable pollutants?

Answer: Biodegradable pollutants are the materials, which are decomposed by microorganisms either by nature itself or by suitable treatment. E.g. Cow dung, domestic sewage, etc.

Non-biodegradable pollutants are the materials, which either do not degrade or degrade very slowly and their presence in the environment even in small quantity is very harmful for human beings and plants. E.g. DDT, mercury, aluminium, etc.

6. What is haematoxic effect?

Answer: Toxic effect to blood is called haematoxic effect. Benzene attacks the blood constituents, leading to leukaemia. Lead poisoning causes anaemia. Carbon monoxide breaks the haemoglobin and makes the oxygen set free, which in turn leads to instantaneous death due to asphyxiation.

7. What are viable particulates?

Answer: The small living organisms that remain suspended in atmosphere are called viable particulates. E.g. Bacteria, fungi, virus, algae, etc.

8. What are non-viable particulates?

Answer: The particulates obtained by burning of fossil fuels are called non-viable particulates.

(i) Dust: It is fine particulates produced due to crushing and grinding of solid materials. E.g. Fly ash, cement, limestone powder, etc.

(ii) Mist: It is obtained by condensation of vapours formed by sprays of liquids. E.g. spray of insecticides.

(iii) Fumes: These are the condensed vapours especially metals.

(iv) Smoke: It is small soot particles produced by combustion of organic matter. E.g. Oil smoke, tobacco smoke, etc.

9. Carbon monoxide is more dangerous than carbon dioxide. Why?

Answer: It is because carbon monoxide combines with haemoglobin to form stable complex called carboxyhemoglobin. Due to its formation, the transport of oxygen from lungs to the cells is restricted. When the level of carbon monoxide reaches 1300 ppm, it is fatal. The high percent of carbon dioxide is global warming.

10. What do you mean by BOD? What is their significance?

Answer: The total amount of dissolved oxygen required by aerobic bacteria to decompose all the organic wastes aerobically in a given waste water ample is called biochemical oxygen demand or BOD of that water sample.

Significance: For a given waste water sample the highest BOD value indicates larger amount of decomposable organic matter present in the waste and hence the waste is said to be more polluted. So, BOD value indicates the degree of pollution in a given water sample.

11. What do you mean by COD?

Answer: The total amount of oxygen required to decompose all the organic wastes chemically is called chemical oxygen demand or COD.

12. What are the advantages of COD determination over BOD determination?

Answer: 1. In BOD determination many oxidisable organic matters do not respond but in COD both biologically oxidisable and biologically inert matters are oxidised.

Determination of BOD requires at least 3 days but COD determination takes only 3 hours.

In BOD test oxidation process is not all complete but in COD test oxidation process may be assume to be complete.

13. What is meant by pollution? Name four important causes of pollution.

Answer: The word pollution, derived from the Latin word **Pollutioenm,** whose meaning to defile or make dirty. The term pollution may be defined in various ways.

It is defined as the unfavourable alteration of our environment, largely because of human activities.

Or, it may be defined as the accumulation of matter in the wrong place or anything released into the environment, which degrade its quality.

Pollution is usually brought by the addition of waste products of human activities to the environment. Some causes of pollution of environment are:

1. Chemical substances when added to the environment.
2. Geochemical substances such as dust, sediment, etc.
3. Biological organisms and products
4. Change of physical properties such as heat, noise, etc.

14. Write the importance of BOD.

Answer: See question no. 10 Significance of BOD.

15. Name four important causes of water pollution.

Answer: The water pollution is caused due to (i) domestic wastes, (ii) waste water from industries, (iii) plant nutrients and (iv) toxic heavy metals.

16. Give an account of indoor air pollution.

Answer: Many houses in the under-developed countries including India use fuels like coal, dung-cakes, wood and kerosene in their kitchens. Incomplete combustion of these fuels produces the toxic gas carbon monoxide. Coal containing varying amounts of sulphur produces sulphur dioxide. These pollutants (CO, SO_2, soot, etc.) are toxic and harmful to human health.

Radon gas, which is one of the most important indoor air pollutants and its radioactive daughters are responsible for a large number of lung cancer deaths each year. Radon can be emitted from building materials like bricks, concrete, tiles, etc. which are derived from soil containing radium.

17. Name four important causes of noise pollution.

Answer: The noise pollution is caused due to (i) various modes of transportation, (ii) industrial operation, (iii) construction activities and (iv) celebrations (social/religious functions).

18. What are pesticides and herbicides? Explain with examples.

Answer: Pesticides are the chemical compounds, which are used to kill pests. Such compounds are insecticides, herbicides and fungicides. Common insecticides includes DDT, BHC, etc., herbicide is triazine.

19. What is green house effect? Which gas is mainly responsible for global warming?

Answer: Troposphere, the lowermost layer of the atmosphere, traps heat by a natural process due to the presence of certain gases. This effect is called green house effect.

Carbon dioxide gas is mainly responsible for global warming. It contributes about 55% to global warming from green house gases.

20. Why does ozone layer important for living being on the earth?

Answer: Ozone layer has remarkable importance due to following reason:

(i) It acts as a protective shield for living organisms on the earth from the effects of UV-light.

(ii) Through absorption of UV-light ozone layer supplies necessary heat to develop positive lapse in the stratosphere due to which stratospheric region is quite stable. Pollutants, if enters into stratospheric region, is entrapped locally instead of diffusion.

21. What are the harmful effects of ozone layer depletion?

Answer: Some harmful effects of ozone layer depletion are:

(i) It damages trees and reduces growth rates.

(ii) It reduces yields of major agricultural crops such as wheat, corn, rice, etc.

(iii) It causes irritation to the eyes and respiratory tracts of human beings.

22. Write a brief note on adverse effects of specific metal pollutants.

Hints: Mercury: It is well known that mercury compounds have many applications such as in industry, production of electrical apparatus, as fungicides, paper and pulp industry, as catalyst, as seed dressing in agriculture and many more.