

Air Pollution

1. Differentiate between the Primary and secondary pollutants.
2. Define the following with suitable examples/reactions.
 - (i) Acid rain
 - (ii) Octane number
 - (iii) Inversion
 - (iv) ALBEDO
 - (v) Oxygen enrichment process
3. Give a labelled self-explanatory diagram of biogeochemical cycle of sulphur.
4. Explain the consequences of global warming briefly.
5. Automobiles are the major source of CO, hydrocarbons and NO_x mixture. How can this be converted to less harmful pollutants? Discuss in detail.
6. Give an account of inorganic and organic particulate matter present in the atmosphere. Discuss a method of controlling emission of particulate matter.
7. Give the mechanism involved in PAN formation during photochemical smog.
8. What are the major sources of CO? Give the method of controlling the amount of CO in the atmosphere.
9. What are the major sources and sink of CO in atmosphere? Discuss a method of measuring CO in an air sample.
10. Write short notes on role of catalytic convertors in automobiles.
11. Draw a labelled diagram of biogeochemical cycle of carbon.
12. What are the major sources and sinks of different NO_x? Give a method of estimating the amount of NO_x in the air sample.
13. Name four different greenhouse gases. How are they affecting global warming?
14. How does catalytic convertor in an automobile reduce air pollution?
15. Illustrate the different regions of atmosphere, specify the different chemical species and biota present in the different regions.
16. Write short notes on the following:
 - (i) Photochemical smog
 - (ii) Method of controlling particulate matter in air

Water Pollution

17. What are the pollutants present in the industrial effluent of petroleum industry? How can these pollutants be taken care off?
18. Define DO. Discuss the method for the estimation of DO in water sample.
19. What is BOD? Give the difference between carbonaceous BOD and nitrification BOD. 5 day BOD of some waste water was found to be 200mg/L. If the reaction rate constant $K = 0.22/\text{day}$, find ultimate BOD.
20. List the pollutants present in waste water of 'electroplating' and 'dairy' industries. Suggest a treatment method for the same
21. Give three properties of water that make it essential for life.
22. What is eutrophication and how can it be controlled? What is Liebig's Law? How can Liebig's law be explained with eutrophication as an example?
23. Name the pollutants present in the effluents of each tannery and textile industries. Suggest a method for the treatment for the same.

24. Draw a labelled diagram of a thermally stratified water body specifying the temperature, chemical species and biota existing in each region.
25. Discuss the role of ion exchange method for the water purification.
26. How is sludge disposed during secondary treatment of water, explain with reactions.
27. How do fertilizers pollute a water body? How can this pollution be controlled? Give Liebig's law of minimum and explain its significance.
28. Write short notes on the disposal methods of different nuclear wastes.
29. Discuss aerobic digestion process applied during treatment of water.
30. Write short notes on the following:
 - (i) Disposal of sludge, (ii) BOD and COD, (iii) Oil spills as water pollutant, (iv) Tertiary treatment of water