

Air Pollution Questions

1. What function does a third body serve in an atmospheric chemical reaction?
2. Why does the lower boundary of the ionosphere lift at night?
3. Considering the total number of electrons in NO_2 , why might it be expected that the reaction of a free radical with NO_2 is a chain terminating reaction?
4. Of the species O, hydroxyl radical, NO_2^* , methyl radical and N^+ , which could most readily revert to a nonreactive, "normal" species in total isolation?
5. Of the gases Ne, SO_2 , He, O_2 and N_2 , which shows the most variation in its atmospheric concentration?
6. What are the reasons for fall or rise in temperature in different regions of the atmosphere?
7. As we go up above the earth's surface, does the temperature decrease continuously? Explain.
8. What are the differences between pollutant and contaminant?
9. Why we should not use freons as coolants in refrigerating equipment's?
10. Is smog formed only in winter or only in summer or in both? Explain.
11. Rain damages the monuments like Taj Mahal in Agra when industries are present nearby. Explain chemistry behind it.
12. It is expected that time is not far off when coastal land will be flooded. Why?
13. CO is more dangerous than CO_2 . Why? Explain chemistry behind it.
14. What would happened if the greenhouse gases were totally missing in the earth's atmosphere? Discuss.
15. O_3 is a toxic gas and is a strong oxidising agent even then its presence in the stratosphere is particularly important. Explain what would happen if O_3 from this region is completely removed?
16. A factory was started near a village. Suddenly villagers started feeling the presence of irritating vapours in the village and cases of headache, chest pain, cough, dryness of throat and breathing problems increased. Villagers blamed the emissions from the chimney of the factory for such problems. Explain what could happened. Give chemical equations for the support of your explanation.
17. Oxidation of SO_2 into SO_3 in the absence of a catalyst is a slow process but this oxidation occurs easily in the atmosphere. Explain how this happens with proper chemistry.
18. O_3 is a gas and heavier than air. Explain why O_3 does not settle down near the earth's surface?
19. Why chain smokers suffer from more heart diseases? Explain with proper chemistry.
20. Differentiate between the Primary and secondary pollutants.
21. Define the following with suitable examples/reactions.
 - (i) Acid rain
 - (ii) Octane number
 - (iii) Inversion
 - (iv) ALBEDO
 - (v) Oxygen enrichment process
22. Give a labelled self-explanatory diagram of biogeochemical cycle of sulphur.
23. Explain the consequences of global warming briefly.
24. Automobiles are the major source of CO, hydrocarbons, and NO_x mixture. How can this be converted to less harmful pollutants? Discuss in detail.
25. Give an account of inorganic and organic particulate matter present in the atmosphere. Discuss a method of controlling emission of particulate matter.
26. Give the mechanism involved in PAN formation during photochemical smog.
27. What are the major sources of CO? Give the method of controlling the amount of CO in the atmosphere.
28. What are the major sources and sink of CO in atmosphere? Discuss a method of measuring CO in an air sample.
29. Write short notes on role of catalytic convertors in automobiles.
30. Draw a labelled diagram of biogeochemical cycle of carbon.
31. 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.
32. Name four different greenhouse gases. How are they affecting global warming?
33. How does catalytic convertor in an automobile reduce air pollution?
34. Illustrate the different regions of atmosphere, specify the different chemical species and biota present in the different regions.
35. Write short notes on the following:
 - (i) Photochemical smog
 - (ii) Method of controlling particulate matter in air