Type: DES

Q1. “Industrial pollution is causing global warming and doom’s day is not far off”. Justify the statement in terms of ecological impacts (4)

Q2. What is adiabatic lapse rate? Derive an expression for adiabatic lapse rate. State all the assumptions (4)

Q3. Differentiate between dispersed and dissolved air flotation systems (2)

Q4. With a neat sketch of sampling train, explain the necessary precautions for gaseous and particulate sampling (4)

Q5. What do you understand by monitoring of air pollutants. With a neat flow sheet, explain Bromocolourimetric technique to monitor SO_2 emissions in the atmosphere (4)

Q6. Differentiate between primary and secondary wastewater treatment techniques (2)

Q7. With neat sketches, explain plume behaviour under different stability conditions (4)

Q8. “Fundamentals of Chemical Engineering are essential for the design of particulate collection equipment”. Justify the statement and deduce an equation for collection efficiency of a Howard settling chamber in terms of volumetric flow of the effluent gas stream ‘Q’, number of trays ‘n’, width ‘W’ and length ‘L’ of the tray, terminal settling velocity V_t assuming the laminar flow condition (4)

Q9. Differentiate between smog and phytochemical smog (2)

Q10. “Even though the total discharge of contaminants in the atmosphere in a given area remains constant from day to day, the degree of air pollution may vary widely because of differences in meteorological conditions”. Justify the statement by elaborating the effect of meteorological factors on the degree of air pollution (4)

Q11. Explain the flaring and catalytic combustion techniques for control of gaseous pollutants (4)

Q12. Differentiate between epidemiological and toxicological studies of air pollution (2)

Q13. What are the characteristics of effluents generated from a Petroleum Refinery complex? Explain the methods of control and abatement of pollution in this plant (4)

Q14. What are the different methods available for control of oxides of nitrogen? Elaborate on any two methods in detail (4)

Q15. Compare and contrast between particulates and gaseous pollutants (2)