PART A

Answer all questions. Each question carries 2 marks.

1. Explain the significance of nitrification and denitrification reactions associated with waste water treatment?
2. Enumerate the various tests for the parameters associated with water pollution.
3. Write a note on aerobic oxidation.
4. Write a note on atmospheric stability.
5. Briefly explain the control aspects of noise pollutants.
6. Write a note on lapse rate, temperature lapse rate and adiabatic lapse rate.
7. Write a note on subsidence inversion and double inversion in relation to atmospheric stability.
8. Write a note on Phytoremediation.
9. Explain the Bioremediation of petroleum sludge using bacterial consortium.
10. Explain a Bioremediation technology to remove radionuclides.

PART B

Answer one full question from each Module. Each question carries 20 marks.

MODULE I

11. a) Write in detail about Reverse osmosis and Electro dialysis based waste water treatment. (10 Marks)
    b) Briefly discuss the preliminary and primary methods of treating water in municipal water treatment. (10 Marks)

Or

12. a) Explain in detail the disinfection of water and coagulation process involved in wastewater treatment? (10 Marks)
    b) Write in detail about concept of Common ETP, major units in ETP and their functions in waste water treatment. (10 Marks)
MODULE II

13. a) Briefly explain the working of an electrostatic precipitator with suitable figure. (10 marks)

b) What is power and intensity in noise pollution? Explain in detail the outdoor noise propagation and indoor noise propagation in relation with noise pollution and control (10 marks)

Or

14. a) Briefly discuss the use of catalytic converters in vehicular pollution control. Explain the principle, design and working of catalytic converters? (10 marks)

b) Describe in detail about the various control methods of gaseous pollutants for controlling oxides of sulphur, nitrogen and carbon. (10 marks)

MODULE III

15. a) Describe with relevant figures, the principle, operation and design aspects of cyclone separator and wet scrubber used in particulate matter control. (10 marks)

b) Explain in detail the outdoor noise propagation and indoor noise propagation in relation with noise pollution and control? (10 Marks)

Or

16. a) Write a note on subsidence inversion and double inversion in relation to atmospheric stability. (10 Marks)

b) Explain in detail about the primary and secondary air pollutants with examples. (10 Marks)

MODULE IV

17. a) Write a detailed note on atmospheric stability. (10 Marks)

b) What are the advantages and disadvantages of biodegradation? Write a note on aerobic oxidation. (10 Marks)

Or

18. a) Discuss in detailed about biooxidation and kinetic mechanism. (10 Marks)

b) Describe in detail the extraction of metals from ores using microbes. (10 Marks)