

[Time: THREE Hours]

[Max. Marks: 80]

“Please check whether you have got the right question paper.”

N.B

- 1) Attempt any three questions from each section.
- 2) Figures to the right indicate full marks.
- 3) Draw neat & labeled diagram wherever necessary.
- 4) Assume suitable data if necessary.

SECTION A

- Q.1 A Define air pollution and differentiate between natural and manmade air pollutions. 06
B Enumerate and describe in brief the various types of engineering devices that are used to control the emissions of gaseous air pollutants from industries. 08
- Q.2 A Name the major and significant minor constituents of the atmosphere with their approximate percentage by volume. 07
B Explain stable and unstable atmosphere and inversion of the atmosphere 06
- Q.3 A An industry utilizes 0.3 MI of oil fuel per month. It has also been estimated that for every 1 MI of fuel oil burnt in the factory, per year, the quantities of various pollutants emitted are given as : particulate matter =2.9t/yr, SO₂=60t/yr, Nox 8t/yr, HC=0.4t/yr, CO = 0.5t/yr. calculate the height of the chimney required to be provided for safe dispersion of the pollutants. 07
B What is photo chemical smog and how is it formed. 06
- Q.4 A How and which of the air pollutant advisory affect the plant and animal life on earth. 07
B What are the sources of smoke and its measurement 06
- Q.5 Write short notes on
A Air quality standards? Emission standards 05
B Environmental impact assessment 04
C Control techniques for spm 04

SECTION B

- Q.6 A Explain functions of the various units provided for water treatment plant with the help of neat diagram 06
B Enlist population forecasting method and describe any one method 08

- Q.7 A The maximum daily demand at a water purification plant has been estimated as 12 million liters per day. Design the dimensions of a suitable sedimentation tank for the raw supplies, assuming a detention period of 6 hrs and the velocity of flow as 20 cm/mm. 07
- B What are the merits and demerits of rapid sand filter as compared with slow sand filter 06
- Q.8 A Write the standard for potable water for the following: Turbidity, P^{++} , Hardness Fluorides, Iron and manganese, B-cali Index. 06
- B Design rapid sand filters for treating water required for a population of 50,000. The rate of supply being 180 liters / day/ person. The filters are rated to work 5000 liters/hr/m² assume whatever data are necessary. 07
- Q.9 A What do you mean by disinfection? What is meant by super chlorination 06
- B Classify various types of filters. Differentiate between the slow sand and rapid sand filter gravity type. 07
- Q.10 Write short notes on [any three]
- A Water aeration 13
- B Water borne diseases
- C Grand water recharge
- D Clarifloculator.