

Total No. of Questions : 12]

SEAT No. :

P867

[4659] - 291

[Total No. of Pages : 3

B.E. (Chemical)

**a - ENVIRONMENTAL ENGINEERING
(2008 Pattern) (Elective - I) (Sem. - I)**

Time : 3 Hours]

[Max. Marks : 100

Instructions to the candidates:

- 1) *Answer 3 questions from Section I and 3 questions from Section II.*
- 2) *Answers to the two sections should be written in separate books.*
- 3) *Neat diagrams must be drawn wherever necessary.*
- 4) *Figures to the right indicate full marks.*
- 5) *Assume suitable data, if necessary.*

SECTION - I

- Q1)** a) Name and describe the four layers of the atmosphere. [6]
b) Name and define the two types of inversions. This type prompts the formation of fog? [6]
c) Describe in brief about Kyoto protocol? [6]

OR

- Q2)** a) Give the typical classification of solid waste. Also, explain each class in brief. [10]
b) Describe the effects of air pollutants on human health, plants and animals. [8]

- Q3)** a) Describe with schematic diagram the working and principles of electrostatic precipitator? [12]
b) Give brief account on sampling and measurement of air pollutants. [4]

OR

- Q4)** a) Draw a neat sketch of cyclone separator and explain the working principles of the same? [8]

P.T.O.

- b) The 5-day 20°C BOD of a wastewater is 250 mg/L. What will be the 10-day demand? If the bottle had been incubated at 25°C and 30°C, what would the 5-day BOD have been? [8]

Given Data:

Reaction rate constant (k) (base e, 20°C) = 0.23 per day = 1.053.

- Q5)** a) Describe the trickling filter with schematic diagram? [8]
b) With the help of neat sketch, describe catalytic oxidation method for air pollution control. [8]

OR

- Q6)** a) List and compare different particulate emission control techniques. [8]
b) Describe air pollution laws and their standards. [8]

SECTION - II

- Q7)** a) Describe types, sources and effects of water pollutants. [8]
b) What are the major types and sources of grit in municipal waste water. Describe the treatment methods used to remove grit. [10]

OR

- Q8)** Write short notes on following: (**Any Three**): [18]
a) MPCB and CPCB norms of air and water pollution.
b) Role of adsorption in advanced wastewater treatment.
c) Treatment of liquid effluent from a complex fertilizer plant.
d) Activated sludge process.

- Q9)** a) Define the term 'Coagulation' and give its significance in advanced wastewater treatment. Also enlist two coagulants. [4]
b) Explain the basic concept of the activated sludge process and indicate the advantages and disadvantages of the two major kinds of activated sludge reactors, with neat diagram. [12]

OR

Q10) List in a tabular form the advantages and disadvantages of the following methods of solid waste disposal in detail. **[16]**

- a) Incineration,
- b) Sanitary land fill,
- c) Composting and pyrolysis

Q11)a) Describe different tertiary water treatment and solid waste management with suitable examples. **[10]**

b) What is ozone depletion? What is its effect on environment? **[6]**

OR

Q12)a) Describe the sources and classification of solid waste? **[8]**

b) Describe the biological nitrification and denitrification with suitable examples? **[8]**

