

Total No. of Questions : 12]

SEAT No. :

**P1520**

**[4759]-27**

[Total No. of Pages : 3

**B.E. (Civil Engineering)**  
**INDUSTRIAL WASTE WATER MANAGEMENT**  
**(2008 Course) (Semester-II) (Open Elective) (401008)**

*Time : 3 Hours]*

*[Max. Marks : 100*

*Instructions to the candidates:*

- 1) Answer any three questions from each section.*
- 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) Use of logarithmic tables, slide rule, Mollier charts, electronic pocket calculator and steam tables is allowed.*
- 6) Assume suitable data if necessary.*

**SECTION-I**

- Q1)** a) What do you understand by physical unit processes? How these are beneficial in waste water treatment scheme. [8]
- b) Explain Electro-dialysis process for removing colloidal and dissolved solids. [8]

OR

- Q2)** a) Discuss the different chemical unit process? Explain any one in detail. [8]
- b) Explain the working of root zone cleaning system. [8]

- Q3)** a) How recycling of treated sewage is done? [8]
- b) Explain activated sludge process with neat sketch. [8]

OR

- Q4)** a) Discuss the effects of toxic chemicals on environment. Give the remedial measures to reduce these effects. [8]
- b) Explain the working principle of filtration in detail. [8]

**P.T.O.**

- Q5)** a) Explain in detail the role of ozone in COD and colour removal from waste water. [9]
- b) What is mean by activated carbon? Give its process and design parameters. [9]

OR

- Q6)** Write short note on following with neat sketch (Any Three): [18]
- a) Ultra-filtration.
- b) Nitrification and denitrification.
- c) Reverse osmosis.
- d) Moving bed bio reactor.
- e) Membrane reactor.

### **SECTION-II**

- Q7)** a) What are the 3R principle? Explain its importance in environment point of view. [8]
- b) Explain the term 'Reuse of sewage in residential building'. [8]

OR

- Q8)** a) How recovery of plastic, paper and metal is carried out from municipal solid waste? [8]
- b) Explain zero discharge concepts for paper and pulp industry. [8]
- Q9)** a) Explain 3R principle for sugar cane processing. [8]
- b) Explain the recovery of metals in electroplating. [8]

OR

- Q10)** a) Explain the amount of water require for textile industry. [8]
- b) What is radioactive waste? How it cause hazard to environment? [8]

**Q11)**a) Explain the theory of adsorption. Give design specification for adsorption using BDST model. [9]

b) How waste water is useful for irrigation? Explain its effects on crop selection. Give its preventive measures. [9]

OR

**Q12)** Explain following term (Any Three): [18]

- a) Adsorption.
- b) Standards related to solid waste.
- c) Green process.
- d) Zero discharge concept for domestic building.
- e) Necessity of treatment of industrial waste.

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