

Total No. of Questions : 12]

SEAT No. :

P3505

[4959]-27

[Total No. of Pages : 3

B.E. (Civil)

**d:INDUSTRIAL WASTE WATER MANAGEMENT
(2008 Pattern) (Semester - II) (Open Elective)**

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) Your answers will be valued as a whole.*
- 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) Explain the following processes for the removal of colloidal & dissolved solids in waste water: **[18]**

- a) Ultra filtration
- b) Reverse- osmosis
- c) Electro- Dialysis

OR

Q2) Attempt the followings

- a) Discuss in detail about the Physical unit processes commonly used in waste water treatment. **[10]**
- b) Explain the process for removal of color and Odour from waste water by activated carbon filtration. **[8]**

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Q3) Attempt the followings

- a) State & draw the single stage and two stage lime treatment process flow diagram for phosphorus removal. [10]
- b) Discuss in detail about the chemical oxidation with ozone for the reduction in COD & colour in waste water? [6]

OR

Q4) Attempt the followings

- a) Explain briefly how wetland could be used for waste water treatment system? [9]
- b) Explain chemical process for removal of heavy metals from waste water. [7]

Q5) Attempt the followings

- a) Explain briefly about the biological process for removal of phenol from industrial waste water? [9]
- b) Discuss the recycling of treated sewage after tertiary treatment? [7]

OR

Q6) Write in brief about: [16]

- a) Membrane reactor with submerged membrane.
- b) Cyclic reactor.
- c) Nitrification process.
- d) De-nitrification process.

SECTION - II

Q7) Attempt the followings

- a) Draw & describe the schematic diagram of a waste water treatment plant to reuse the sewage in residential complex. [9]
- b) Describe the methods of three R principles to convert waste into wealth? [9]

OR

Q8) Attempt the followings

- a) Explain how waste water could be used for irrigation? Also discuss about preventive measures and health aspects? [9]
- b) Explain the mechanism of Soda recovery in pulp and paper mills? [9]

Q9) Attempt the followings

- a) Explain the concept of Zero Discharge of effluent? [8]
- b) Discussed the application of zero discharge technology based on three R principles for pulp & paper industries. [8]

OR

Q10) Attempt the followings

- a) Draw & discuss the flow sheet for the zero discharge of waste water produced in Sugar cane industries? [8]
- b) Explain about the zero discharge of solid waste from residential complex? [8]

Q11) Attempt the followings

- a) Discuss the pollution hazards due to radioactive materials? [8]
- b) Explain the sorption mechanism & BDST model? [8]

OR

Q12) Attempt the followings

- a) Explain in brief the standards related to solid waste from residential complex? [6]
- b) Discuss about the green processes adopted in the industries? [10]

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