Total No. of Questions : 12]

SEAT No. :

P1928

[Total No. of Pages : 3

[5254]-27

B.E. (Civil)

INDUSTRIAL WASTE WATER MANAGEMENT

(2008 Pattern) (Open Elective) (Semester - II)

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) Give the note on following processes with suitable example. **[18]**

a) Processes of Ultra filtration

b) Processes of Reverse -osmosis

c) Processes of Electro- Dialysis

OR

Q2) Attempt the followings :

a) Explain about Physical unit processes commonly used in waste water treatment in details with suitable sketches. **[10]**

b) Explain the process for removal of color and Odour from waste water by activated carbon filtration. **[8]**

Q3) Attempt the followings :

a) State and draw the single stage and two stage lime treatment process flow diagram for phosphorus removal. **[9]**

b) Discuss in detail about the chemical oxidation with ozone for the reduction in COD and colour in waste water? **[7]**

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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 : **[4+4+4+4=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 in to 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]**