

**IV B.Tech II Semester Regular Examinations, Apr/May 2006**  
**INDUSTRIAL WASTE AND WASTE WATER MANAGEMENT**  
**(Civil Engineering)**

**Time: 3 hours**

**Max Marks: 80**

**Answer any FIVE Questions**  
**All Questions carry equal marks**

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1. (a) What do you mean by aeration? Why and how is it done?  
(b) What is activated carbon? Describe its use. [8+8]
2. (a) Write a detailed note on Neutralization.  
(b) What is the necessity of equalization in Industrial waste treatment? Explain the working of the same with suitable examples. [8+8]
3. Enumerate the various processes involved in tertiary treatment of industrial waste and describe any one of them. [16]
4. 150 cumecs of swage of a city is discharged in a perennial river, which if fully saturated with oxygen and flows at a minimum rate of 1250 cumecs with a minimum velocity of 0.15 m/sec. If the 5-day BOD of the sewage is 260 mg/l, find out where. The critical DO will occur in the river. Assume:  
(a) The coefficient of purification of river as 4.0  
(b) Coefficient of DO as 0.11  
(c) The ultimate BOD as 12.5% of the 5 day BOD of the mixture of sewage and rive water. [16]
5. What are the advantages of recirculation of industrial wastes and use of treated municipal waste water in industries? Explain in detail. [16]
6. What different operations are carried out in paper and pulp industry? Also give the following information in detail of the same industry.  
(a) Waste water characteristics  
(b) by product recoveries  
(c) Treatment methods. [16]
7. Write in detail about generation of waste water, its characteristics and suggest suitable treatment for distilleries waste water. [16]
8. What different operations are carried out in oil refinery? Also give the following information in detail of the same industry.  
(a) Waste water characteristics  
(b) byproduct recoveries

(c) Treatment methods.

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1. (a) Describe the method of the removal of iron and manganese from Water.  
(b) Tabulate the water quality requirements for Brewery Industry. [8+8]
2. (a) Enumerate the basic theories of Industrial wastewater management and explain the proportioning.  
(b) What is Equalisation? List and explain any four methods of the Equalisation in industrial wastewater. [8+8]
3. Enumerate the various processes involved in tertiary treatment of industrial waste and describe any one of them. [16]
4. A town discharges 80 cumecs of sewage into a stream having a rate of flow of 1200 cumecs during lean day, at a 5-day BOD of sewage at the given temperature is 250 mg/l. Find the amount of critical DO deficit and its location in the downstream coefficient of self purification ( $f_s$ ) as 3.5. Assume saturation DO at given temperature as 9.2 mg/l. [16]
5. (a) Write a detailed note on reuse of industrial waste water.  
(b) Write a note on Economics of industrial waste water treatment. [8+8]
6. Give the characteristics and treatment of the waste generated in the following industries  
(a) Textile  
(b) Tannery [16]
7. What different operations are carried out in fertilizer plant? Also give the following information in detail of the same industry.  
(a) Waste water characteristics  
(b) byproduct recoveries  
(c) Treatment methods. [16]
8. Write in detail about the different steps involved in the manufacturing process of oil refineries? Also give the following information in detail of the same industry.  
(a) Waste water characteristics

(b) by product recoveries

(c) treatment methods.

[16]

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1. (a) Describe the method of the removal of iron and manganese from Water.  
(b) Tabulate the water quality requirements for Brewery Industry. [8+8]
2. (a) Enumerate the basic theories of Industrial wastewater management and explain the strength reduction.  
(b) What is volume reduction? List and explain any four methods of the volume reduction in industrial wastewater. [8+8]
3. Design an aerated Grit chamber for treatment of composite municipal and industrial waste with average flow of 1 MLD. Assume all other necessary data. [16]
4. (a) What is meant by disposal of wastewater by dilution? Mention the conditions favourable for it.  
(b) What is land treatment? Discuss the conditions under which it is suitable. [8+8]
5. (a) Write a detailed note on reuse of industrial waste water.  
(b) Write a note on Economics of industrial waste water treatment. [8+8]
6. (a) List and discuss the major components of tannery waste water.  
(b) Differentiate between vegetable and chrome tanning. Draw the flow chart for treating tannery waste and name the units. [16]
7. Write in detail about generation of waste water, its characteristics and suggest suitable treatment for distilleries waste water. [16]
8. Give the detailed information with respect to
  - (a) manufacturing process
  - (b) Waste water sources and characteristics
  - (c) suitable treatment methods of pharmaceutical plants. [16]

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1. (a) What are the general quality requirements of cooling water?  
(b) Enumerate the Special treatments required for treating the Industrial Water and explain any one of them in detail. [8+8]
2. (a) What is strength reduction? List and explain any four methods of the strength reduction in industrial wastewater.  
(b) What is the necessity of Neutralization in Industrial waste treatment? Explain the working of the same with suitable examples. [8+8]
3. (a) Write a note on effect of Industrial pollutants on sewage treatment.  
(b) Write a detailed note on Importance and necessity of Common Effluent Treatment Plant. [8+8]
4. The domestic sewage of a town is to be discharged into a stream after treatment. Determine the maximum permissible effluent BOD and the percentage purification required in the treatment plant, given the following particulars:  
Population of town: 60000, D.W.F. of sewage: 150 litres per capita Per day, Minium flow of stream:  $0.25 \text{ m}^3/\text{s}$ , BOD contribution per capita: 0.075 kg/day, BOD of stream: 3 mg/l, Max.BOD of stream on downstream: 5 mg/l. [16]
5. (a) Write a detailed note on reuse of industrial waste water.  
(b) Write a note an Economics of industrial waste water treatment. [8+8]
6. Describe the manufacturing process and sources of wastes from pulp and paper mill, the characteristics of the composite wastewater and the flow sheet adopted fore treatment of the waste water. [16]
7. What different operations are carried out in fertilizer plant? Also give the following information in detail o the same industry.  
(a) Waste water characteristics  
(b) byproduct recoveries  
(c) Treatment methods. [16]
8. Write in detail about the different steps involved in the manufacturing process of oil refineries? Also give the following information in detail of the same industry.  
(a) Waste water characteristics

(b) by product recoveries

(c) treatment methods.

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