Code No: RR420103 **Set No. 1**

IV B.Tech II Semester Supplementary Examinations, June 2007
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. (a) What is treatability Index and what is its use?
   (b) How are the samples of Industrial wastewater collected for finding the characteristics and how are they preserved? [8+8]

4. A wastewater treatment plant disposes off its effluents into a stream at a point A. Characteristics of the stream at a location fairly upstream of A and of the effluent are as below:

Item	Units	effluent	stream
Flow	m^3/S	0.16	0.4
Dissolved oxygen	mg/l	1.60	8.20
Temperature	^0C	25	22
BOD_5 at 20^0C	mg/l	32	2.0

Assume that the deoxygenation constant K', at 200C (base e) = 0.20 d-1 and reaeration constant R at 20^0C (base e) = 0.40 d-1 for the mixture. Equilibrium concentration of dissolved oxygen Cs for the fresh water is as follows.

$Tem.^0C$	18	20	22	23	24	25	26
Cc(mg/l)	9.54	9.17	8.99	8.83	8.53	8.38	8.22

The velocity of the stream downstream of the point A is 0.16 m/s. Determine the critical oxygen deficit and its location. Use temperature coefficients of 1.04 for K' and 1.02 for R'. [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. 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. Give the characteristics and treatment of the waste generated in the following industries.

(a) steel plants.

(b) Oil refineries. [16]

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Code No: RR420103 **Set No. 2**

IV B.Tech II Semester Supplementary Examinations, June 2007
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 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) 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. (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. A waste water effluent of 0.56 m^3/s with a BOD=60 mg/l, DO=2.5 mg/l and temperature of 23^0C enters a river where the flow is 2.9 m^3/s with a BOD of 4.0 mg/l, DO=8.2 mg/l and temperature of 17^0C. From laboratory BOD testings, K1 of the waste is 0.10 per day at 20^0 C. The river down stream has an average velocity of 0.18 m/s and depth of 1.2 m. Calculate the minimum dissolved oxygen and its distance downstream by using the oxygen sag equation. [use K2 = 2.2 V/H 1.35 where V= mean velocity of flow in m/s and H= mean depth of flow in m]
   Take do saturation at 18o C and 20oC as 9.5 mg/l and 9.3 mg/l respectively. [16]

5. (a) Define Primary and secondary recycling of Industrial waste water.
   (b) Discuss the attributes of successful recycling programmes. [8+8]

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. 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. Give the characteristics and treatment of the waste generated in the following industries.

   (a) steel plants.

   (b) Oil refineries. [16]

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Code No: RR420103 **Set No. 3**

IV B.Tech II Semester Supplementary Examinations, June 2007
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) 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. (a) What is treatability Index and what is its use?
   (b) How are the samples of Industrial wastewater collected for finding the characteristics and how are they preserved? [8+8]

4. A wastewater effluent of 600 l/s with a BOD = 60 mg/l, DO = 2.5 mg/l and temperature of 25^0 C enters a river where the flow is 30 m^3/sec and BOD = 3 mg/l, DO = 8.5 mg/l and temperature of 16^0 C. Deoxygenation constant for the waste is 0.10 per day at 20^0 C. The velocity of water in the river downstream is 0.15 m/s and depth of flow is 1.5 m. Determine the following after mixing of wastewater with the river water:
   (a) Combined discharge
   (b) BOD
   (c) DO, and
   (d) Temperature. [16]

5. (a) Define Primary and secondary recycling of Industrial waste water.
   (b) Discuss the attributes of successful recycling programmes. [8+8]

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. Draw a neat flow sheet of dairy industry and show the points where the waste is generated. Give the characteristics of the generated waste and discuss the treatment from view point of disposal by dilution. [16]

8. What different operations are carried out in steel plant? Also give the following information in detail of the same industry.

   (a) Waste water characteristics

   (b) byproduct recoveries

   (c) Treatment methods. [16]

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Code No: RR420103 **Set No. 4**

IV B.Tech II Semester Supplementary Examinations, June 2007
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) 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. (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. (a) Discuss in detail the process of self purification of natural rivers.
   (b) What are the major costs and limitations of placing industrial wastes in oceans? [8+8]
5. (a) Define Primary and secondary recycling of Industrial waste water.
   (b) Discuss the attributes of successful recycling programmes. [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. Write in detail about generation of waste water, its characteristics and suggest suitable treatment for distilleries waste water. [16]
8. Write about generation of waste water, its characteristics and suggest suitable treatment for steel plant wastewater. [16]

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