

III B. Tech II Semester Regular Examinations, April - 2016
INDUSTRIAL WATER & WASTE WATER MANAGEMENT
(Civil Engineering)

Time: 3 hours

Maximum Marks: 70

- Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B**)
 2. Answering the question in **Part-A** is compulsory
 3. Answer any **THREE** Questions from **Part-B**

PART -A

- 1a) Define Water quality criterion. [3M]
 b) Illustrate a simplified process flow diagram for a typical municipal wastewater treatment plant. [4M]
 c) What is Industrial Wastewater? [4M]
 d) What are various methods for treatment of CETP sludge? [3M]
 e) What is meant by Advanced Oxidation of a Pulp Mill Bleaching [4M] Wastewater?
 f) Discuss Waste water treatment process. [4M]

PART -B

- 2a) What are the prospects of waste utilization from food industry? [4M]
 b) Characterize the various treatment processes for food and beverage industry wastewater. [8M]
 c) Name few processes on utilizing the wastes from food and beverage industry. [4M]
 3 a) Explain Reverse Osmosis. [3M]
 b) Illustrate a simplified process flow diagram for a typical municipal wastewater treatment plant. [8M]
 c) Write notes on Elutriation. [5M]
 4 a) What are the steps involved in industrial waste water management? [8M]
 b) What are the advantages and disadvantages of disposal of Industrial waste water into streams? [8M]
 5 a) Explain the Oxygen sag curve in streams when industrial waste water is [8M] disposed into streams.
 b) Explain how you treat a cluster of tannery plants effluent as a common [8M] treatment process.
 6a) Write a detailed note on treatment of steel Plant waste. [8M]
 b) Describe the treatment of coke oven waste. [8M]
 7 a) Enumerate the Chemical and Pharmaceutical Manufacturing Wastewater [8M] Treatment Issues.
 b) Write in detail on the different types of filtration removal of solids and [8M] dissolved solids from distillery Industry wastewater.



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SET - 2

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PART -A

- 1a) Define Water quality objective. [3M]
b) Give suggestions for improving the reuses of Municipal waste water. [4M]
c) Why is it Necessary to Treat Industrial Wastewater? [4M]
d) What is Land treatment? [3M]
e) What is the prescribed safe disposal limit of BOD? [4M]
f) List the pollution caused by Dairy waste water. [4M]

PART -B

- 2 a) What is the processing method of ultra-pure water? [4M]
b) What are the advantages and disadvantages of Boilers and cooling water? [8M]
c) What is the major advantage of the water quality objectives approach to water resources management? [4M]
3 a) What is the use of municipal wastewater in industries? [3M]
b) Explain the process for removal of color & odour from waste water by activated by carbon filtration. [8M]
c) Discuss the advanced wastewater treatment by freezing. [5M]
4 a) Discuss the Preliminary and Primary Wastewater Treatment Processes. [8M]
b) Draw a standard flow chart for waste water treatment operation. [8M]
5 a) What are the steps involved in industrial waste water management? [8M]
b) What are the advantages and disadvantages of disposal of Industrial waste water into streams? [8M]
6 a) Explain the manufacturing process of pulp and paper with the aid of a flow diagram. [8M]
b) Describe the pollution potential of pulp and paper mill wastes and the remedial measures. [8M]
7 a) Enumerate the Chemicals and Pharmaceuticals Manufacturing Wastewater Characteristics. [8M]
b) Explain in detail the pollution caused by tannery wastewater and explain how it can be controlled by bioremediation. [8M]



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PART -A

- 1a) Define: Water quality standard [3M]
 b) Explain: Ultra filtration. [4M]
 c) What is meant by waste water characterization? [4M]
 d) State merits and demerits of land Treatment. [3M]
 e) List the various primary treatment process of waste water. [4M]
 f) Write the composition of an effluent from a pharmaceutical industry. [4M]

PART -B

- 2 a) Explain potassium permanganate consumption value. [4M]
 b) Detail the primary pure water processing system. [8M]
 c) What are the different characteristics of Industrial waste water? [4M]
- 3 a) Explain the following processes for the removal of colloidal & dissolved solids in wastewater: i) Ultra filtration ii) Reverse-osmosis iii) Electro- Dialysis. [3M]
 b) What are the factors to be considered for the use of treated municipal waste water in industries? [8M]
 c) Explain the advanced wastewater treatment for removal of Iron and Manganese. [5M]
- 4 a) Discuss in detail about the Physical unit processes commonly used in waste water treatment. [8M]
 b) How does dissolved oxygen help for the treatment of waste water? How the dissolved oxygen level is maintained in the stream, explain with the help of oxygen Sag curve. [8M]
- 5 a) Explain the effects of the following industrial effluent on aquatic environment when discharged without treatment: [8M]
 (i) Nitrogenous fertilizer plant and (ii) Molasses based distillery.
 b) What are the merits and demerits of common effluent treatment plants? [8M]
- 6 a) Explain the treatment of Fertilizer waste water in detail with the help of a flow diagram. [8M]
 b) Explain how the treatment of refinery wastes is carried out in different steps. [8M]
- 7 a) Bring out clearly the differences among Physical Chemical and Biological treatment of Tannery waste. [8M]
 b) Describe the effects of Tannery waste on receiving waters and sewers. [8M]



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PART -A

- 1 a) Define: Precautionary principle [3M]
- b) Explain Ultra-pure water. [4M]
- c) How is the Industrial wastewater sampling done? [4M]
- d) What is the concept of Zero Discharge of effluent? [3M]
- e) Draw the flow sheet for the zero discharge of waste water produced in Sugar cane industries? [4M]
- f) How is the wastewater treatment done for the liquid waste from Food Processing industries? [4M]

PART -B

- 2 a) Explain the Integration level of LSI and trend of quality of ultra- pure water. [4M]
- b) What is setting and control of quality of water? What is Slime prevention? [8M]
- c) Discuss: Water quality management of cooling water. [4M]
- 3 a) Explain the difference between Industrial waste & Municipal waste water. [3M]
- b) Discuss in detail about the chemical oxidation with ozone for the reduction in COD and colour in waste water. [8M]
- c) Explain the advanced wastewater treatment for removal of colour and Odour. [5M]
- 4 a) Explain the necessity of equalization and proportioning for Industrial waste water treatment. [8M]
- b) Discuss the relative merits and demerits of Batch and continuous processes for treatment of waste water. [8M]
- 5a) Explain the Principle of water circulation. [8M]
- b) Detail the two major reasons for increasing the recycling rate of industrial water. [8M]
- 6 a) Explain Distillation and cracking processes in detail. [8M]
- b) Discuss the application of zero discharge technology based on three R principles pulp and paper industries. [8M]
- 7 a) Discuss about the green processes adopted in the industries. [8M]
- b) Explain in detail about the Chemicals and Pharmaceutical Manufacturing Wastewater Treatment. [8M]

