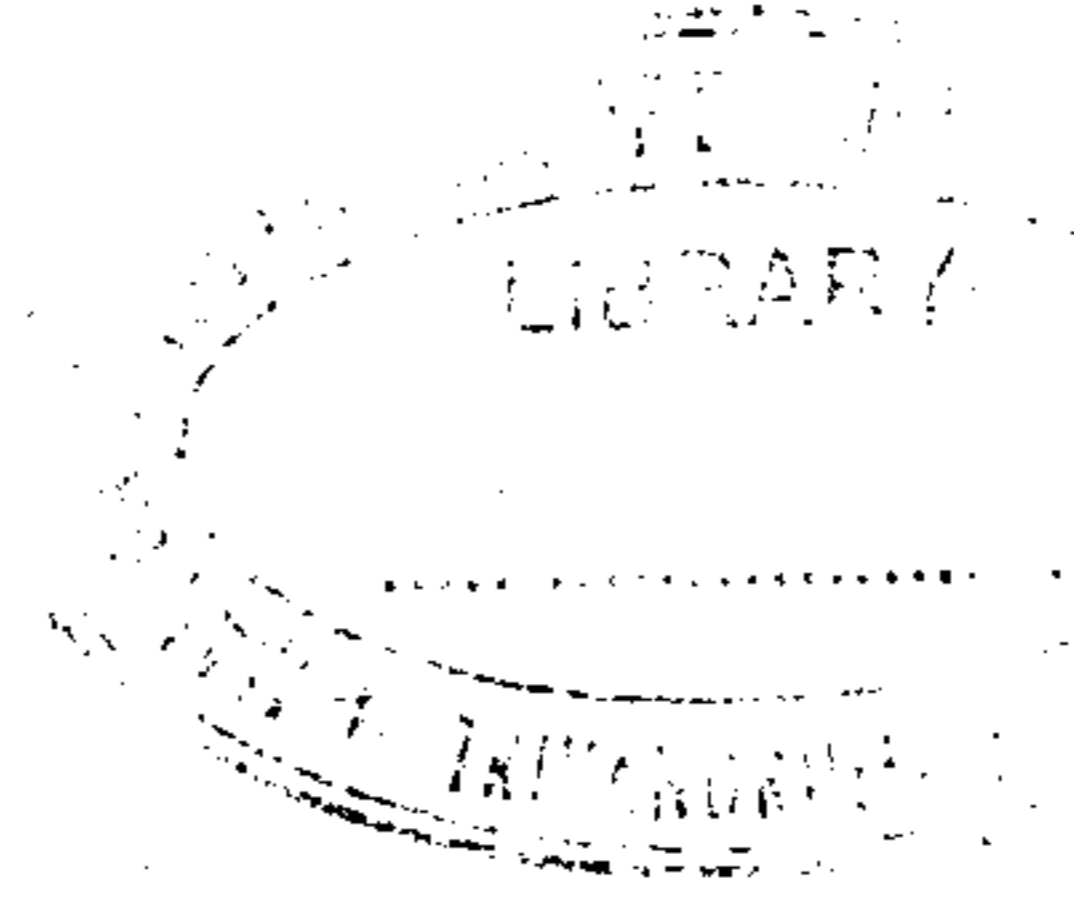




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**B – 2543**

Reg. No. : .....

Name : .....

**Eighth Semester B.Tech. Degree Examination, December 2016  
(2008 Scheme)**

**08.807.3 : Elective – V : INDUSTRIAL WASTE WATER MANAGEMENT (C)**

Time : 3 Hours

Max. Marks : 100

**Note :** Answer *all* questions.  
Assume *any* missing data suitably.

**PART – A**

- I. a) List any five important reasons as to why an industry should treat its waste water.
- b) Explain effluent standards applied in the protection of streams.
- c) Derive Streeter-Phelps oxygen sag equation in river analysis.
- d) List the different zones of pollution in stream.
- e) Explain the process of re-oxygenation in rivers.
- f) List the different types of biological treatment done for treating industrial waste water.
- g) Explain reverse osmosis process for removing inorganic dissolved solids.
- h) What are the characteristics of paper mill waste briefly. **(8×5=40 Marks)**

**PART – B**

**Module – I**

- II. a) Write short notes on neutralisation, equalisation and proportioning of wastes.

OR

- b) Discuss in detail on BOD, COD and TOD.

**20**

P.T.O.

**Module - II**

- III. a) A wastewater effluent of 600 l/sec with a BOD = 60 mg/l, DO = 2.5 mg/l and temperature of 25°C enters a river where the flow is 30 m<sup>3</sup>/sec and BOD = 3 mg/l, DO = 8.5 mg/l and temperature of 16°C. Deoxygenation constants for the waste are 0.10/day at 20°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 waste water with the river water :
- Combined discharge
  - BOD of mix
  - DO of mix and
  - Temperature of mix.

OR

- b) List the techniques applied in removal of suspended solids. Explain any three methods.

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**Module - III**

- IV. a) Explain briefly the methods for removal of inorganic solids in industrial waste water.

OR

- b) Explain the sources and characteristics of tannery waste water with the help of flow diagram.

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