

**Eighth Semester B.Tech Degree Examination**

**(2013 Scheme)**

**13.806.6 Elective-IV INDUSTRIAL WASTEWATER MANAGEMENT (C)**

**Time: 3 Hours**

**Max. Marks: 100**

**MODEL QUESTION PAPER**

**PART-A**

Answer ALL questions

1. Discuss the merits and demerits of joint treatment of industrial wastewater and domestic sewage.
2. Write a short note on stream protection measures.
3. Define neutralisation and explain how it is achieved in industrial wastewater treatment plants.
4. BOD of sewage for 5 days at 25<sup>0</sup> C is 220 mg/l. If the deoxygenation constant at 20<sup>0</sup> C is 0.12 per day, estimate the BOD for 8 days at 30<sup>0</sup> C.
5. Enlist the various characteristics of wastewater from a tannery. **(5 x 4 = 20 Marks)**

**PART-B**

(Answer ANY ONE full Question from each Module)

**Module-I**

6. Explain the effects of industrial wastewater on streams. **(20)**
7. Describe how the volume and strength reduction can be achieved in industries. **(20)**

**Module-II**

8. (a) Explain in detail the factors to be considered while stream sampling. **(10)**  
(b) Enumerate the various zones of degradation of a stream? **(10)**
9. It is proposed to treat industrial wastewater and domestic sewage in the domestic sewage treatment plant in a town with population of 40000. The per capita production of sewage is 220 lpcd with a per capita BOD of 65 g/day. The industrial wastewater produced is 3 MLD with a BOD of 1300 mg/l. The river flows with a minimum discharge of 4000 l/s at a saturated DO of 7.5 mg/l. If a minimum DO of 4 mg/l has to be maintained in the river, compute the degree of treatment of the combined sewage required, assuming an average expansion factor of 10%. Assume deoxygenation and reoxygenation coefficients and 0.1 per day and 0.3 respectively. **(20)**

**Module-III**

10. Describe the methods of removal of dissolved organic solids from industrial wastewater. **(20)**
11. Discuss the various treatment methods for the removal of colloidal solids. **(20)**

#### **Module-IV**

12. With a flow diagram, explain the processes in a paper and pulp mill. Also discuss the characteristics of waste and the treatment methods to be adopted. **(20)**
13. Describe the various processes in a textile industry with a flow chart and explain the sources of wastewater, their characteristics and propose the treatment methods. **(20)**