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**ET-507(B)**

# B.Tech. Civil (Water Resources Engineering)

01120

## Term-End Examination

## December, 2010

## ET-507(B) : WASTE WATER TREATMENT

*Time : 3 hours* *Maximum Marks : 70*

*Note : Answer any five questions. All questions carry equal marks. Assume any data suitably, if necessary,*

1. (a) What is meant by Biochemical Oxygen Demand ? With the help of BOD curve explain the carbonaceous and nitrogenous demands. 7

   (b) Following are the results of tests carried out on 5% dilution of waste water : DO in aerated water used for dilution = 2.5mg/$l$ 7

   DO of diluted sample after 5-days incubation = 0.9 mg/$l$

   DO of the original sample = 0.5 mg/$l$ Calculate 5-day BOD of the sample.

2. (a) Describe various methods for testing of House Sewers. 7

(b) A population of 25000 is residing in a town with 100 hectares of area. The average runoff coefficient for this area may be taken as 0.6. Calculate the discharge for combined system of sewers. [Per capita water demand = 130 *l* pcd; Interception rate = 80%; and Concentration time = 30 min] 7

3. (a) With the help of neat sketches, explain ***any two*** of the following : **5x2=10**

(i) Skimming Tank

(ii) Grit Chamber

(iii) Oil and Grease trap

(b) Briefly describe the principle of Gas Transfer. 4

4. (a) Describe the concept of biological growth in a batch oxidation system. Also, describe various assumptions associated with it. 8

(b) Distinguish between aerobic oxidation and anaerobic decomposition. 6

5. (a) Differentiate between Activated Sludge Process and Trickling Filter Process. 8

(b) An activated sludge process with basin capacity of 2400 $m^3$ has a MLVSS of 4800 mg/*l*. Sludge with VSS of 16000 mg/*l* is wasted at the rate of 240 $m^3$/d. Determine the Mean Cell Residence Time. 6

6. (a) Explain various advantages and disadvantages of using waste water for irrigation purposes. 7

(b) Describe the necessity for reuse of waste water. 7

7. Write short notes on *any four* of the following : 4x3½=14

(a) House Sewer

(b) Oxidation Pond

(c) Catch Basin

(d) Comminution

(e) Bio - towers

(f) Wet land and aquaculture

(g) Sludge drying bed