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ET-507(B)

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B.Tech. Civil (Water Resources Engineering)

Term-End Examination

June, 2011

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) Describe important contaminants in waste water. Classify these contaminants giving their sources and significance. 7

(b) Determine the 5 - day BOD of the sample, which has been tested with 5% dilution. Use the following data. 7

DO in original sample = 0.8 mg/*l*

DO in aerated water used for dilution = 3.2 mg/*l*

DO in diluted sample after 5 - days incubation = 1.4 mg/*l*

2. (a) What are various types of manholes ? With the help of neat sketch explain any one type of manholes. 7

(b) Describe the factors to be considered in the design of plumbing system for collection of sewage in buildings. Also describe the purpose of providing a trap. 7

3. (a) With the help of neat sketches describe the following : **2x5=10**
   (i) Oil and Grease trap
   (ii) Simple hand raked screen
   (b) Differentiate, using neat sketches, between cascade aerator and spray aerator. 4

4. (a) Explain in detail the Activated Sludge Process. 7
   (b) Differentiate between the Trickling filter and rotating biological contactors (RBC). 7

5. (a) What are various techniques used for dewatering of sludge ? Explain any one in detail. 7
   (b) Determine the mean cell residence time for an activated sludge process. Volume of the basin is 2500 m^3 and MLVSS is equal to 4500 mg/*l*. The sludge is discharged at a rate of 200 m^3/d with VSS = 15000 mg/*l*. 7

6. (a) Explain various benefits of waste water reuse. 7
   (b) Describe the necessity for reuse of waste water. 7

7. Write short notes on ***any four*** of the following : **4x3½=14**
   (a) Oxygen sag curve
   (b) Self cleansing velocity
   (c) Flushing cistern
   (d) Oxidation Pond
   (e) Catch basin
   (f) Bio - tower
   (g) Ventilation of sewers.
