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ET-507(B)

B.Tech. Civil (Water Resources Engineering)

Term-End Examination

June, 2014

ET-507(B) : WASTE WATER TREATMENT

Time : 3 hours *Maximum Marks : 70*

Note : *Attempt any **five** questions. All questions carry equal marks. Assume any data suitably, if necessary. Use of calculator is permitted.*

1. Describe in detail various physical, chemical and biological characteristics of waste water. *14*

2. (a) Draw neat sketches of the following and describe their functions : *5+5*

(i) Floor trap

(ii) Intercepting trap

(b) What do you understand by anti-siphonage pipe ? Explain briefly. *4*

3. (a) Briefly describe the principle of Gas Transfer and its applications in waste water treatment. *7*

(b) With the help of neat sketch, briefly describe dissolved air flotation process. *7*

4. (a) A town of 100,000 population is to discharge treated domestic sewage to a stream with a minimum flow of 1·5 m^3/s and BOD of 3 mg/*l*. The sewage dry weather flow is 110 lpcd and per capita BOD contribution is 70 g/d. If the BOD in the stream just below the discharge point is not to exceed 4 mg/*l*, determine : *10*

(i) maximum permissible effluent BOD.

(ii) the percentage purification required.

(b) Differentiate between aerobic and anaerobic processes of decomposition of organic matter. *4*

5. (a) What is meant by "Sludge Thickening" ? Describe any one of the commonly used methods for thickening. *7*

(b) Explain the process of anaerobic sludge digestion. *7*

6. (a) Describe various benefits of reusing the waste water. *6*

(b) What do you understand by spreading basins ? Explain, how spreading basins are better than direct injection well system for ground water recharge. *8*

7. Write short notes on any ***four*** of the following :

$4 \times 3\frac{1}{2} = 14$

(i) Drop manhole

(ii) Junction chamber

(iii) Lamp hole

(iv) Grease and oil trap

(v) Principle of sedimentation

(vi) Bell type flushing cistern