BICE-018

B.Tech. CIVIL ENGINEERING (BTCLEVI)
Term-End Examination
June, 2016

00586

BICE-018 : ENVIRONMENTAL ENGINEERING – II

Time : 3 hours   *Maximum Marks : 70*

Note : Attempt any five questions. All questions carry equal marks. Use of scientific calculator is allowed. Assume any missing data suitably.

1. (a)   Describe the method of estimating the quantity of sanitary sewage of a city.   7

    (b)   Explain the process of maintenance of sewers.   7

2. (a)   Calculate the quantity of sludge generated per day in a clarifier having moisture content of 95%. The clarifier removes 60% of incoming solids. Inflow to the clarifier is 200 m³/hr with 300 ppm of suspended solids. Assume specific gravity of sludge as 1·02.   7

    (b)   What are the various ways to reuse treated wastewater ? Discuss briefly.   7

3. **(a)** What are the main principles of design of aerated lagoons ? Discuss briefly. 7

(b) Explain the systems of separate and combined sewers for collection of sewage. 7

4. **(a)** What are the various zones of pollution developed in the river system after a polluted stream is added to the river ? Explain briefly. 7

(b) Two streams of effluents, 5,000 m^3/day and 10,000 m^3/day are generated in a town from two different locations. BOD_5 of the first stream is 250 mg/l and that of the second stream is 220 mg/l. What would be the BOD_5 of the mixed stream, if the above two streams are mixed together ? Also, the mixed stream is now disposed into a small river having a flow of 250 l/s and BOD_5 of 2 mg/l. What is the BOD_5 of the river water immediately after mixing with the mixed sewage stream ? Assume that the two waste streams and the river have the same temperature. 7

5. **(a)** Explain the principles of aerobic, anaerobic and facultative stabilization ponds. 8

(b) Discuss the process of sedimentation in wastewater treatment. 6

6. (a)   Describe the various methods of wastewater treatment.   *7*

   (b)   Describe the operation of a Trickling Filter giving a neat sketch.   *7*

7.   Write short notes on the following :

   (a)   Ventilation of Sewers   *4*

   (b)   Do Sag Curve   *4*

   (c)   Sewage Sickness   *3*

   (d)   Hydraulic Retention Time   *3*