00511

No. of Printed Pages : 2

BICE-018

B.Tech. CIVIL ENGINEERING (BTCLEVI)

Term-End Examination

December, 2015

BICE-018 : ENVIRONMENTAL ENGINEERING – II

Time : 3 hours *Maximum Marks : 70*

Note : *Attempt any **five** questions. Each question carries equal marks. Use of scientific calculator is allowed. Assume any missing data suitably.*

1. Describe the Activated Sludge Process (ASP). What are the limitations of the ASP ? Explain various modifications of the ASP. *14*

2. (a) What are the main principles of design of oxidation ponds ? Explain briefly. *7*

   (b) What measures are required to prevent sewage sickness ? Describe them briefly. *7*

3. (a) Explain various methods of testing of sewers. *7*

   (b) Explain the process of Anaerobic Sludge Digestion. *7*

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

(b) 10 million litres per day of sewage of a town, with a BOD_5 of 220 mg/*l*, is to be discharged into a river stream having flow of 250 *l*/s and BOD_5 of 5 mg/*l*. What should be the percentage treatment of the sewage required, if the BOD_5 of the river cannot exceed 15 mg/*l* ? Assume that the sewage and river are at the same temperature. *7*

5. (a) Calculate the quantity of sludge produced per day in a clarifier having moisture content of 95%. The clarifier removes 60% of incoming solids. Inflow to the clarifier is 200 m^3/hr with 300 ppm of suspended solids. Assume specific gravity of sludge as 1·02. *10*

(b) Differentiate between hydraulic retention time and sludge retention time. *4*

6. (a) Describe briefly about various physical and chemical processes affecting the natural purification of rivers. *7*

(b) Differentiate between single-stage standard digester and two-stage high rate digester. *7*

7. (a) Describe various methods of sludge drying. *10*

(b) Explain DO sag curve. *4*
