Roll No. ☐☐☐☐☐☐☐☐☐☐☐☐☐

Total No. of Questions: 09　　　　　　　　　　　　　　Total No. of Pages: 02

B.Tech.(CE) (Sem.6)
ENVIRONMENT ENGINEERING –II
Subject Code: BTCE-606
Paper ID: A2293

Time: 03 Hrs.　　　　　　　　　　　　　　　　　　　Max. Marks: 60

INSTRUCTIONS TO CANDIDATES:

1.　　**Section A is COMPULSORY consisting of TEN questions carrying TWO marks each.**

2.　　**Section B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.**

3.　　**Section C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.**

SECTION A

1.　　Write briefly:

　　a.　　What is separate system?

　　b.　　Define time of concentration.

　　c.　　Write two advantages of egg-shaped sewers.

　　d.　　Write two advantages of aerobic decomposition over anaerobic decomposition.

　　e.　　What is sludge thickening?

　　f.　　What is batch reactor?

　　g.　　What is the importance of coliform bacteria?

　　h.　　What are the various systems of plumbing in a building?

　　i.　　Write two utilities of using traps in the drainage system.

　　j.　　What is drop manhole?

SECTION B

2.　　A population of 30,000 is residing in a town having an area of 60 hectares. If the average coefficient of runoff for this area is 0.60, and the time of concentration of the design rain is 30 minutes, calculate the discharge for which the sewers of a proposed combined system will be designed for the town. Make suitable assumptions if required.

3.　　Discuss the methods of oils and grease removal from the sewage.

4. Discuss USAB reactor with working principle.

5. Write notes on anaerobic lagoon.

6. What is stabilization pond? Discuss its working principle in detail.

SECTION C

7. A city discharges 1500 litres /second of sewage into a stream, whose minimum rate of flow is 6000 litres per second. The temperature of sewage as well as stream water is 20°C. The 5-day B.O.D. at 20°C for sewage is 200 mg/l and for the stream water is 1mg/l. The D.O. content of the sewage is zero, and that of the stream is 90% of the saturation D.O. If the minimum D.O. to be maintained in the stream is 4.5 mg/l, find out the degree of sewage treatment, required. Assume the de-oxygenation coefficient is 0.1, and re-oxygenation coefficient is 0.3.

8. Discuss the activated sludge process unit with recirculation by the help of schematic diagram.

9. Design an Imhoff tank to treat the sewage from a small town with 30,000 population. The rate of sewage may be assumed as 150 litres per head per day. Make suitable assumptions wherever needed.