Roll No. | | | | | | | | | | | | |

Total No. of Pages : 02

Total No. of Questions : 09

B.Tech (Civil) (Sem.–8)

ENVIRONMENTAL ENGINEERING-II

Subject Code : CE-406

Paper ID : [A0626]

Time : 3 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. Differentiate between the main sewer and trunk sewer.

b. Distinguish between "self cleaning velocity" and non scouring velocity.

c. Enumerate the various steps involved in the layout and construction of sewers.

d. State the necessity of velocity control device in grit chamber. Name the devices used.

e. What is meant by relative stability?

f. Draw a curve of oxygen sag.

g. What do you mean by on-site sanitation? Brief it.

h. State the purpose of sludge thickening.

i. Name the feed material sources for biogas recovery in a sewage treatment plant.

j. What is drop manhole?

SECTION-B

2. List the effects of sewage on environment.

3. Discuss the significance of total solids and BOD in determining the characteristics of sewage.

4. Design a septic tank with dispersion pit for a hostel with a population of 255 and peak discharge of 300 litres per minute. Take desludging period as one year. Assume suitable design criteria and draw a neat sketch of the designed tank.

5. What is the function of grit chamber? What are the major design criteria governing the design of grit chamber?

6. Determine the size of a high rate trickling filter for the following data:

Flow	5.0 mld
Recirculation ratio	1.8
BOD of raw sewage	270 mg/1
BOD removal in primary clarifier	35%
Final effluent BOD designed	40 mg/1

SECTION-C

7. State the objectives of preliminary treatment. Discuss the various types of screens adopted in sewage treatment.

8. Design an Imhoff tank to treat the sewage from a small town with 24,000 populations. The rate of sewage may be assumed as 160 liters per head per day. Make suitable assumptions wherever needed. Draw neat sketch.

9. Write short note on the followings :

   a) Disinfection and polishing

   b) Macrophyte ponds

   c) UASB