



**B.E/B.TECH DEGREE EXAMINATIONS: APRIL/MAY 2024**

(Regulation 2018)

Fifth Semester

**CIVIL ENGINEERING**

U18CEI5201: Environmental Engineering

**COURSE OUTCOMES**

**CO1:** Plan and Estimate Public water supply system.

**CO2:** Design the various components of water treatment plants.

**CO3:** Design water treatment networks and service supply to building.

**CO4:** Estimate and design of sewage flow and plumbing system.

**CO5:** Design of Septic Tanks and various components of sewage treatment plants.

**Time: Three Hours**

**Maximum Marks: 100**

**Answer all the Questions:-**

**PART A (10 x 2 = 20 Marks)**

**(Answer not more than 40 words)**

- |   |     |                   |
|---|-----|-------------------|
| 1. List the methods of population forecasting.                    | CO1 | [K <sub>1</sub> ] |
| 2. How the corrosion of metal pipes is reduced?                   | CO1 | [K <sub>1</sub> ] |
| 3. State the between unit operation and unit process.             | CO2 | [K <sub>2</sub> ] |
| 4. Define fluoridation and defluoridation .Give their importance. | CO2 | [K <sub>1</sub> ] |
| 5. Mention the different system of distribution networks.         | CO3 | [K <sub>1</sub> ] |
| 6. Draw a neat diagram for water supply house service connection? | CO3 | [K <sub>1</sub> ] |
| 7. Distinguish between Dry weather flow and wet weather flow.     | CO4 | [K <sub>2</sub> ] |
| 8. Compare water supply main and wastewater main.                 | CO4 | [K <sub>1</sub> ] |
| 9. What is meant by screening?                                    | CO5 | [K <sub>1</sub> ] |
| 10. Define sludge volume index.                                   | CO5 | [K <sub>1</sub> ] |

**Answer any FIVE Questions:-**

**PART B (5 x 16 = 80 Marks)**

**(Answer not more than 400 words)**

- |   |   |     |                   |
|---|---|-----|-------------------|
| 11. a) Describe the different sources of water and their characteristics.                               | 8 | CO1 | [K <sub>2</sub> ] |
| b) Define the term intake of water. List various types of intakes and explain any one with neat sketch. | 8 | CO1 | [K <sub>2</sub> ] |

12. a) Write short notes on Water Softening and disinfection of water. 8 CO2 [K<sub>2</sub>]  
 b) Discuss the process used to remove excess Iron and Manganese in water. 8 CO2 [K<sub>2</sub>]
13. a) Illustrate the different types of pipe appurtenances used in water supply 16 CO3 [K<sub>2</sub>]
14. a) The total area of the district is 36 hectares, the density of population is 250 per hectare, and the quota of water supply per day is 225litres;  
 Calculate the quantity of sewage and disinfection sewer  
 (a) Sewage for which the sewers of a separate system should be designed.  
 (b) Design the combined sewer if the quantity of storm water is 2m<sup>2</sup>/sec. 16 CO4 [K<sub>3</sub>]
15. a) Design a septic tank for a housing colony of population 150 having rate of water supply as 120lpcd. Assume 1:3 B Designing period as 2 year space for sludge could be taken as 30 l/head/year depth of the tank as 1.5m to 0.5 free board .Draw the neat sketch of plan , Longitudinal and Cross section of the tank. 16 CO5 [K<sub>3</sub>]
16. a) Predict the population for the years 2025, 2030, 2050 from the following census figures of a town, by Arithmetical Increase Method, Geometric Increase Method and Incremental Increase Method and comment your result. 16 CO1 [K<sub>4</sub>]

Year	1970	1980	1990	2000	2010	2020
Popula tion	8081300	8318000	8590630	8882792	9415570	10379295

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