

**5E5062****5E5062**

**B.Tech. V Semester (Main/Back) Examination, Nov./ Dec. - 2017**  
**Civil Engineering**  
**5CE2A Environmental Engg.-I**

**Time : 3 Hours****Maximum Marks : 80****Min. Passing Marks : 26****Instructions to Candidates :**

*Attempt any five questions, selecting one question from each unit. All Questions carry equal marks. (Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly). Units of quantities used/calculated must be stated clearly.*

**Unit - I**

1. a) What do you mean by environment? What are the components of environment? Describe role of an environmental engineer. (8)
- b) Describe various types of water demands. (8)

**OR**

1. a) What is per capita demand? How can we measure/find out it and what are the important factors which affect it? (8)
- b) Explain the terms – population forecasting and design period. Also discuss the factors which affect water consumption. (8)

**Unit - II**

2. a) How is the surface water different than ground water in terms of quality? Explain with suitable examples and also describe other sources of water. (8)
- b) What do you mean by hydrological cycle? Draw a neat sketch and explain the processes involved in it. (8)

**OR**

2. a) How do we assess the yield of a ground water source? Also explain the process of development of a source. (8)
- b) List out the chemical, physical and biological standards of drinking water with their permissible limits as per the Indian standards. (8)

### Unit - III

3. a) What are the different types of pipes used in water supply? Explain their merits and demerits along with the selection criteria and factors affecting their selection. (8)
- b) What are the different unit processes involved in water treatment. Explain solids separation in detail. (8)

OR

3. a) What are the different types of pumps used in water supply? Describe their suitability with comparison. (8)
- b) What do you understand by softening of water? Explain in detail, any one method with neat sketch. (8)

### Unit - IV

4. a) Explain the process of filtration and working of rapid sand filters with suitable sketch. (8)
- b) Explain the removal of dissolved solids from water with suitable explanation of the methods. (8)

OR

4. a) What is disinfection of water? Describe the process and different methods used for this purpose with their suitability. (8)
- b) Compare slow sand filters with rapid sand filters. (8)

### Unit - V

5. a) What are the methods of water distribution? Explain the components of distribution system. Also discuss types of distribution reservoirs. (8)
- b) Explain the Hardy - Cross method for analysis of pipe networks with suitable example. (8)

OR

5. Write short notes on any Four :

(4 × 4 = 16)

- i) Components of water service connection
- ii) Plumbing systems
- iii) Layout of Distribution system
- iv) Mass curve method
- v) Fire Hydrants