

Roll No. ....

Total Pages : 3

**019402**

**May 2024**

**B.Tech. (ENV) IV SEMESTER**

**Water Quality and Supply (PCC-EED-203)**

Time : 3 Hours]

[Max. Marks : 75

*Instructions :*

1. *It is compulsory to answer all the questions (1.5 marks each) of Part-A in short.*
2. *Answer any four questions from Part-B in detail.*
3. *Different sub-parts of a question are to be attempted adjacent to each other.*

**PART-A**

1. (a) What is Environmental Engineering and discuss its scope. (1.5)
- (b) Differentiate between rapid sand filter and slow sand filter. (1.5)
- (c) What points should be kept in mind while selecting a water source? (1.5)
- (d) What do you mean by turbidity and state its various types of measurement equipment. (1.5)
- (e) What are the requirements of good distribution system? (1.5)
- (f) How a pump is selected that to be used in pumping station? (1.5)

019402/30/111/166

[P.T.O.]

- (g) Define desalination and demineralization. (1.5)
- (h) What is MPN and state its significance. (1.5)
- (i) Define coagulation and flocculation and state the coagulants added in water for treatment. (1.5)
- (j) Differentiate between dead end system and grid iron system. (1.5)

**PART-B**

- 2. (a) What are the various physical and chemical water quality parameters, show the quality standards of each parameter. (10)
- (b) Explain the various types of pipes used in water transportation. (5)
- 3. (a) Explain types of pumps with their characteristics and efficiencies. (8)
- (b) Design a rapid sand gravity filter for newly growing urban City of population 50,000, rate of supply being 180 liters per day per person. Assume the relevant suitable data as per IS specifications. (7)
- 4. Two primary settling basins are 26 m in diameter with a 2.1 m side water depth. Single effluent weir are located on the peripheries of the tank. For a water flow of 26,000 m<sup>3</sup>/day, calculate the following : (15)
  - (a) Surface area and volume.
  - (b) Overflow rate in m<sup>3</sup>/m<sup>2</sup>/d.
  - (c) Detention time in hours
  - (d) Weir loading in m<sup>3</sup>/m.d

- 5. (a) Explain various valves used in water supply system with their significance. (7)
- (b) Define chlorination and explain its various types with a neat curve. (8)
- 6. (a) What do you mean by disinfection and explain its various methods. [7]
- (b) What are the layouts of distribution network with their advantages, disadvantages and neat sketch? (8)
- 7. Population of 5 decades from 1930 to 1970 are given below in table. Find out the population after one, two, and three decades beyond the last known decade, by
  - (a) Arithmetic Increase Method.
  - (b) Incremental Increase Method.
  - (c) Geometric mean method. (15)

Year	Population
1930	25000
1940	28000
1950	34000
1960	42000
1970	47000