

Code: CE5T2

**III B.Tech - I Semester – Regular/Supplementary Examinations
MARCH 2021**

**ENVIRONMENTAL ENGINEERING - I
(CIVIL ENGINEERING)**

Duration: 3 hours

Max. Marks: 70

PART – A

Answer *all* the questions. All questions carry equal marks

11x 2 = 22 M

1.

- a) State the significance of protected water supply.
- b) What is “Design period”? Mention design period for various components in a water supply scheme.
- c) Why turbidity in water is considered objectionable?
- d) Explain the Jar Test.
- e) Define hardness and explain any one simple method for its removal.
- f) Distinguish between slow sand filter and rapid sand filter with reference to rate of filtration, filter media, period of cleaning.
- g) Write a note on “break point chlorination”.
- h) What are the requirements of distribution system?
- i) What points are to be kept in view in the design of distribution system?
- j) Differentiate between one pipe and two pipe plumbing systems.
- k) What are Hydrants and mention their significance.

PART – B

Answer any **THREE** questions. All questions carry equal marks.

3 x 16 = 48 M

2. a) Discuss the factors affecting water demand. 8 M

b) Define an intake structure. What are the factors governing the location of an intake? 8 M

3. a) Discuss the significance of Nitrogen Content, BOD, COD and DO in Water Quality. 8 M

b) Calculate the size of a rectangular settling tank to treat 2MLD of water. Take detention time as 4 hours and surface loading rate as $20 \text{ m}^3/\text{day}/\text{m}^2$. 8 M

4. a) Describe in details the criteria for a good disinfectant, mechanism and methods of disinfection. 8 M

b) Write a brief account of construction and operation and troubles in rapid sand filters. 8 M

5. a) Discuss any two methods for softening of water. Mention the advantages and drawbacks of each method. 8 M

b) What do you understand by an equivalent pipe? How do you determine its length when the pipes are i) in series ii) in parallel? 8 M

6. a) Write short notes on: 8 M

i) Air relief valve

ii) reflex valve and

iii) scour valve

b) Explain in detail types of fittings involved in water supply and house drainage with the help of neat sketches. 8 M