PARUL UNIVERSITY
FACULTY OF ENGINEERING & TECHNOLOGY
B.Tech. Summer 2022-23 Examination

Semester: 4   Date: 22-3-2023
Subject Code: 203115252   Time: 2.00 pm to 4.30 pm
Subject Name: WATER SUPPLY,TREATMENT & DISTRIBUTION   Total Marks: 60

Instructions:
1. All questions are compulsory.
2. Figures to the right indicate full marks.
3. Make suitable assumptions wherever necessary.
4. Start new question on new page.

Q.1 Objective Type Questions - (Fill in the blanks, one word answer, MCQ-not more than Five   **(15)**
in case of MCQ) (All are compulsory) (Each of one mark)

1.Increase in population of a rapidly growing city, may be estimated by
(A) Arithmetical mean method
(B) Geometrical method
(C) Incremental increase method
(D) Graphical comparison method

2. The most ideal disinfectant used for drinking water throughout the world, is
(A) Alum
(B) Lime
(C) Chlorine
(D) Nitrogen

3. Check valves are installed
(A) On the delivery side of the pumping set
(B) At the interconnections between polluted water system and a potable water system
(C) Both (A) and (B)
(D) Neither (A) nor (B)

4. The intake opening is generally covered by a screen to prevent entry of debris etc. and its level is kept
(A) At the level of water of the source
(B) At the bottom of water of the source
(C) At about 2.5 m above the bottom
(D) None of these

5. Standard unit of turbidity of water is in one liter of distilled water, one milligram of finely divided
(A) Silica
(B) Mud
(C) Clay
(D) Organic matter

6. According to the Indian Standard recommendations, a water requirement of _____ per head per day is assumed for residential buildings.

7. What is the design period for the water treatment unit?

8.Zeolite softening process removes_____

9. Temporary hardness of water is caused by the presence of_____

10. According to BIS the maximum permissible limit of dissolved solids in drinking water is_____

11. Which chemical is generally added in the process of coagulation and flocculation?

12. What is the value of uniformity coefficient in rapid sand filter

13. The common methods used for disinfection in water treatment plants are_____

14. Sedimentation is a physical process used in water treatment to remove_____

15.Give any one type of Pipe joint in distribution system.

Q.2 Answer the following questions. (Attempt any three) **(15)**
    (1) Give the different sources of water & explain it.
    (2) Give different type of pipes used in water supply.
    (3) Enlist different types of Water Demand & Explain any one in detail.
    (4) What is "Design period" in water supply projects? Describe the life span for various components?

Q.3 A) Explain Fluctuations in Rate of Water Demand in detail. **(07)**

    B) Explain types of Intakes. Explain any two with diagram. **(08)**

<div align="center">**OR**</div>

    B) The population data for a town is given below. Find out the population in the year 2021, 2031 and 2041 by (a) arithmetical (b) geometric. **(08)**

Year	1971	1981	1991	2001	2011
Population	84,000	1, 15,000	1, 60,000	2, 05,000	2, 50,000

(07)

Q.4 A) Design a flocculator for design flow of 250 m3 / hour. Assume suitable data of various parameters.

<div align="center">**OR**</div>

    A) Find out the head loss due to friction in a rising main from the following data: Length of the rising main= 600 m, Diameter of pipe= 0.2 m, Discharge required to be pumped = 1200 lit/min, Friction factors f'= 0.025 **(07)**

    B) Explain types of Distribution Network in Water Distribution System. **(08)**