

[Total No. of Questions - 9] [Total No. of Printed Pages - 4]  
(2125)

15203

**B. Tech 6th Semester Examination**

**Water Supply & Treatment (OS)**

**CE-6005**

**Time : 3 Hours**

**Max. Marks : 100**

*The candidates shall limit their answers precisely within the answer-book (40 pages) issued to them and no supplementary/continuation sheet will be issued.*

**Note :** Attempt any one question from each of the section A, B, C, D & all the questions from section E.

**SECTION - A**

1. (a) Explain the requirement of having a planned water supply scheme for a city. What are the essential components of an efficient water supply scheme? (5+5=10)
- (b) Write short notes on the following:
  - (i) Variation in water demand
  - (ii) Intake towers (5+5=10)
2. (a) Calculate the future population for a town for the year 2031 by geometric increase & incremental increase method. (10)

Year	2001	2011	2021
Population	6,000	5,000	8,000

- (b) What are the common sources of water for a water supply scheme? State the factors that govern the final choice of a water source. (5+5=10)

**[P.T.O.]**

2

15203

**SECTION - B**

3. (a) Describe the significance of the followings in water quality criteria:
  - (i) Hardness of water
  - (ii) Nitrogen content (5+5=10)
- (b) Explicate the multiple tube fermentation technique for bacteriological analysis of water. (10)
4. (a) Write short notes on:
  - (i) BOD
  - (ii) Water borne diseases (5+5=10)
- (b) Explain the importance of physical & chemical analysis of water for domestic use. (10)

**SECTION - C**

5. (a) Design a rectangular sedimentation tank for treating 5 million litres of water per day. Take detention time of 4 hrs and velocity of water as 10 cm/min. Assume any suitable data, if necessary. (10)
- (b) What is the importance of Disinfection in water supply? What are the common disinfectants used in water supply projects? (5+5=10)
6. (a) Write short notes on:
  - (i) Clari-flocculation
  - (ii) Break point chlorination (5+5=10)
- (b) Distinguish between slow sand & rapid sand filter. (10)

## SECTION - D

7. (a) Write short notes on:
- (i) Pumping method for water distribution.
  - (ii) Balancing storage of reservoir. (5+5=10)
- (b) Illustrate the various layouts of water distribution network with their merits & demerits. (10)
8. (a) Write short notes on:
- (i) Types of reservoir.
  - (ii) Gravity method for water distribution. (5+5=10)
- (b) Enumerate the requirements of an efficient water distribution system. (10)

## SECTION - E

9. Attempt the following questions.
- (a) The factor to obtain peak hourly demand from average daily demand is:
- (i) 1.5 (ii) 1.8
  - (ii) 2.0 (iv) 2.7
- (b) The colour of water for domestic use on Pt-Co scale should not exceed:
- (i) 0-5 ppm (ii) 5-10 ppm
  - (iii) 10-20 ppm (iv) 20-50 ppm
- (c) Flowing through period of a sedimentation tank compared to detention time:
- (i) More (ii) Less
  - (iii) Equal (iv) None of these

[P.T.O.]

- (d) The treatment of water with activated carbon is known as
- (i) Prechlorination (ii) Dechlorination
  - (iii) Super chlorination (iv) Hypochlorination
- (e) The max. allowable concentration of iron in water is
- (i) 1.0 ppm (ii) 0.5 ppm
  - (iii) 0.3 ppm (iv) 0.03 ppm
- (f) Coagulants used function better when the raw water is
- (i) Acidic (ii) Alkaline
  - (iii) Neutral (iv) None of these
- (g) Cleaning of rapid sand filter is generally done by
- (i) Scrapping (ii) Back washing
  - (iii) Removal of sand (iv) None of these
- (h) Layout for water distribution system for an irregular pattern city is
- (i) Dead end system (ii) Grid iron system
  - (iii) Ring system (iv) Radial system
- (i) Simple submerged intakes is suitable for
- (i) Large water supply project
  - (ii) Small water supply scheme
  - (iii) Medium size project (iv) All of these
- (j) Water theft in water supply scheme is assumed as
- (i) 5% (ii) 10%
  - (iii) 25% (iv) 15% (2×10=20)