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06CV61

**Sixth Semester B.E. Degree Examination, May/June 2010**  
**Environmental Engineering - I**

Time: 3 hrs.

Max. Marks:100

**Note: Answer any FIVE full questions, selecting  
at least TWO questions from each part.**

**PART - A**

- 1 a. Explain the importance and need for a planned water supply scheme to a town. (06 Marks)
- b. Define per capita demand and explain the various factors that effect the per capita demand. (08 Marks)
- c. List the various methods of population forecasting and explain any two of them. (06 Marks)
- 2 a. What is a design period? Explain the factors governing the design period. (06 Marks)
- b. Explain infiltration galleries and infiltration wells, with neat sketches. (06 Marks)
- c. The census data of population of a town are as follows :

Year	1971	1981	1991	2001
Population	16000	24000	34000	45000

Estimate the population in the year 2021 by geometrical increase method and incremental increase method. (08 Marks)

- 3 a. What are intake structures? Explain the factors governing the location of an intake. (06 Marks)
- b. What is meant by economic diameter of rising main? (06 Marks)
- c. What are water borne diseases? Explain the control measures for it. (08 Marks)
- 4 a. With a typical flow chart, explain the water treatment unit you would propose for domestic purpose. (06 Marks)
- b. Define overflow rate and detention period for plain sedimentation tank. (08 Marks)
- c. The maximum daily demand at a water treatment plant has been estimated as 10 MLD. Design a circular sedimentation tank assuming a detention period of 4 hours and depth of water in tank as 3.5 m. (06 Marks)

**PART - B**

- 5 a. Write briefly on : i) uv - radiation treatment ; ii) Treatment of swimming pool water. (10 Marks)
- b. What do you mean by fluoridation and de-fluoridation? Explain any one method of de-fluoridation in detail. (10 Marks)
- 6 a. Explain the mechanism of filtration. (06 Marks)
- b. Explain with a neat sketch the working of a rapid sand filter. (08 Marks)
- c. Design the approximate dimensions of a set of rapid gravity filters for treating water required for a population of 50,000; the rate of supply being 180 litres per day per person. The filters are rated to work for 5000 litres per hour per .m<sup>2</sup>. (06 Marks)
- 7 a. Explain break point chlorination and super chlorination. (06 Marks)
- b. What is softening of water? Discuss the lime soda process of softening. (06 Marks)
- c. What is aeration? Explain the type of aerators. (08 Marks)
- 8 Write short notes on :
  - a. Fire hydrant
  - b. Variations in demand of water
  - c. Zeolite softener
  - d. Reservoir intake.
 (20 Marks)

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Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.  
2. Any revealing of identical appeal to evaluator and/or equations written eg, 42+8 = will be treated as malpractice.