Total No. of Questions :10]   *[Total No. of Printed Pages :4*

Roll No..

CE - 603

B.E. VI Semester

Examination, December 2012

Environmental Engineering - I

Time : Three Hours

Maximum Marks : 100   *Minimum Pass Marks :35*

Note : 1. Answer all questions. All questions carry equal marks.

2. Total five questions are to be answered

3. There is internal choice within each question.

4. Answer should be precise and to the point only

5. Assume suitable data if necessary and state them clearly.

1) a) What is meant by the term "Per Capita Demand"? Mention and discuss the factors that influence Per Capita Demand. (10)

    b) Predict the population for the years 2011.2017 and 2021 from the following census data of town by "Geometric progression method". (10)

Years	1961	1971	1981	1991	2001
Population (Thousands)	270	281	295	303	320

OR

2) a) What is meant by the variations in the rate of demand? What are the effects of these variations on the design of various units of a water supply scheme? (10)

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b) Enumerate the various forms in which ground water occurs in nature. Write brief note on "Open wells".(10)

3) a) What are the common impurities found in natural sources of water? Explain their effects upon its quality. (5)

b) Enumerate the various physical characteristics of raw water supplies and discuss the following : (10)

   i) Turbidity

   ii) Taste and odour

c) What are the usual types of water borne diseases? Enumerate the bacteria responsible for them. (5)

OR

4) a) Describe how samples of water should be collected and sent to the laboratory for bacteriological test, indicating the necessary precautions to be observed. (8)

b) What are the requirements of Pumping station. (8)

c) Why are pressure pipes most commonly used for conveying water from distant surfaces to the town of supply? (4)

5) a) Design a set of a "Rapid gravity filter" for treating water required for a population of 2,00,000, the rate of supply being 200 litres/day/person. The filters are rated to work 6000 litres/hour/sq-m. (10)

b) Enlist different coagulants generally used for water treatment. Explain the procedure for finding out the optimum dose of Alum by "Jar test". (10)

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OR

6) a) What is meant by "disinfection"? Explain various types of Chlorination. (10)

b) What is water "Softening? Describe "Zeolite process of softening water in details. (10)

7) a) Find the required storage capacity of a reservoir for the data given below. The draft is uniform with 16 M1. (12)

Months	Run-off (M1)
1	22
2	20
3	8
4	15
5	9
6	34
7	46
8	57
9	35
10	15
11	7
12	8
13	22
14	20
15	8
16	15

b) Describe various methods of leak detection of water from the underground mains. (8)

OR

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8) a) Explain the Hardy - Cross method used for pipe network analysis in water distribution system. (10)

   b) Explain Fire Hydrants in detail. (10)

9) a) What do you know about water pollution legislation? State the functions of State Board set up for the water pollution control by the State Government. (10)

   b) Explain as to how you will treat rural water before supplying. (10)

OR

10) a) Describe Conservancy and Water Carriage systems with their advantages and disadvantages. Explain how water Carriage system has become popular in urban areas. (10)

    b) Describe the one-pipe system and two-pipe system of plumbing through which discharge from sanitary fixtures in the building can be conveyed. (10)

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