

## ***B. Tech Degree VI Semester (Supplementary) Examination, October 2009***

### **CE 601A ENVIRONMENTAL ENGINEERING I (2006 Scheme)**

Time : 3 Hours

Maximum Marks : 100

**PART A***(Answer all questions)***(8 x 5 = 40)**

- I. a. Write a short note on global environmental issues.  
 b. What are the various points which are to be kept in mind while selecting a suitable pumping station site?  
 c. Discuss the various factors that govern the selection of a particular source of water in formulating a town/city water supply scheme.  
 d. Write a detailed note on the detention and prevention of wastage of water in the distribution system.  
 e. Explain the significance of self cleansing velocity and non scouring velocity in the design of sewers.  
 f. Explain principles of house drainage.  
 g. Write a note on the self-purification property of streams.  
 h. What are the main causes of air pollution?

**PART B****(4 x 15 =60)**

- II. a. Explain the factors that affect per capita water demand. (7)  
 b. The population of a locality as obtained from census report is as follows:

Census Year	1911	1921	1931	1941	1951
Population	3,50,000	4,66,000	9,94,000	15,60,000	16,23,000

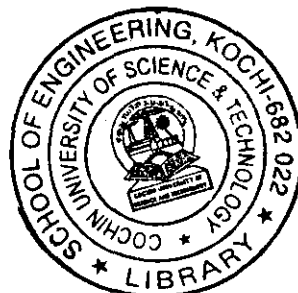
Estimate the population of the locality in the year 1971 by using incremental method. (8)

**OR**

- III. a. A water supply scheme is to be designed for a city with a population of 2,50,000. Calculate the design demand for (i) pumps (ii) distribution systems. The average per capita daily demand is taken as 260 litres. (7)  
 b. What are the important chemical characteristics of treated water? Explain the determination of any two. (8)
- IV. a. Why are the pressure pipes most commonly used for conveying water from distant surfaces to the towns of supply? (7)  
 b. From a clear water reservoir 3m deep and maximum water level at 30.00, water is to be pumped to an elevated reservoir at 75.00 at the constant rate of 9,00,000 litres per hour. The distance is 1500m. Give the economical diameter of the rising main and the water horse power of the pump. Neglect minor losses and take  $f = 0.01$ . (8)

**OR**

- V. a. State the factors you would take into consideration and the procedure you would follow in designing a distribution system for the water supply of a city. (7)

*(Turn over)*

- b. A pipe network consists of the following pipes:

Pipe	Length (metres)	Diameter (m)	Friction Factor
AB	500	0.30	0.014
BC	300	0.20	0.010
AD	300	0.20	0.012
DC	500	0.20	0.011

Inflow at A is  $10\text{m}^3/\text{sec}$ , while outflows at B, C and D are  $0.3$ ,  $0.5$  and  $0.2\text{m}^3/\text{sec}$ , respectively. Find the flow in each pipe taking only one trial. The pressure at 'A' is  $100\text{m}$  of water. (8)

- VI. a. Explain the different systems of house plumbing with their advantages and disadvantages. (7)
- b. Discuss the various types of water piping systems that may be employed in buildings for fulfilling the water demands of its residents, giving merits and demerits of each system. (8)

**OR**

- VII. a. For a small town having a population of 45,000 residing in an area of 40 hectares. Find the design discharge for the combined sewer. Run of coefficient = 0.4, Time of concentration = 30 minutes, Rate of water supply 150 litre/capita/day. (7)
- b. Write short notes on (i) Drop manhole (ii) Siphon spillway (iii) Inverted Siphon (iv) Traps. (8)

- VIII. a. Explain the meaning of disposal of sewage by land treatment and describe the steps involved in it. (7)
- b. What is oxygen deficit? Explain oxygen sag curve. (8)

**OR**

- IX. a. Briefly discuss any two methods employed for control of gaseous air pollutants. (7)
- b. What are the various types of refuse disposal? Describe the land filling method in detail. (8)

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