D 42516 (Pages : 2) Name.....

Reg. No.....

SEVENTH SEMESTER B.TECH. (ENGINEERING) DEGREE EXAMINATION DECEMBER 2007

CE 04 703—ENVIRONMENTAL ENGINEERING—I

(2004 admissions)

Time : Three Hours Maximum : 100 Marks

Answer **all** *questions.*

1. (a) What are the factors governing the selection of a particular source of water ?

   (b) A 30-cm diameter well penetrates 25 m below the static water table. After 24 hours of pumping at 5,400 litres/minute, the water level in a test well at 90 m is lowered by 0.53 m and in a well 30 m away, the drawdown is 1.11 m. What is the transmissibility of the aquifer ?

   (c) Explain the term fluctuation in water demand.

   (d) Explain the significance of turbidity and chlorides from the points views of water quality criteria.

   (e) Explain the theory of filtration.

   (f) What are the advantages and disadvantages of centrifugal pump ?

   (g) Explain any *two* valves in water supply system.

   (h) Explain the methods of leak detection in distribution system.

   (8 × 5 = 40 marks)

2. (a) With neat sketch, explain any *three* types of tube well. (15 marks)

   Or

   (b) Explain any *three* types of intake structures with sketch. (15 marks)

3. (a) (i) Estimate the population of a city in 2050 by Geometrical Increase method :

Year :	1951	1961	1971	1981	1991	2001
Population :	15,40,000	17,30,000	21,10,000	22,30,000	24,00,000	26,10,000

(10 marks)

(ii) Explain why bacteriological test is important in handling problems of water supply. (5 marks)

Or

(b) (i) Explain the water conservation techniques. (8 marks)

(ii) What are the essentials of water supply Engineering. (7 marks)

Turn over

4. (a) (i) Design a sedimentation tank of a water works to treat 10×10^6 litres water per day. Assume the velocity of flow in the tank as 0.12 m/min and the detention period as 10 hours.

(10 marks)

(ii) Explain how to determine the optimum coagulant quantity by jar test. (5 marks)

Or

(b) (i) Mention any *three* methods of softening water. Describe Zeolite process of softening water in detail.

(10 marks)

(ii) What is Break point chlorination ? (5 marks)

5. (a) Explain the different layouts of pipe networks. (15 marks)

Or

(b) What are the different materials used for water supply pipes ? Write their comparative merits and demerits.

(15 marks)

[4 × 15 = 60 marks]