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Question Paper Code : 21208

B.E./B.Tech. DEGREE EXAMINATION, MAY/JUNE 2013.

Fifth Semester

Civil Engineering

CE 2304/CE 53/10111 CE 504 — ENVIRONMENTAL ENGINEERING — I

(Regulation 2008/2010)

Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. What are the components of a water supply (scheme) system?

2. What are the acceptable quality standards as per BIS10500 : 1983 for Fluoride and Nitrates?

3. What are the two types of 'Intake' according to their position?

4. How will you calculate the total head in the design of pumbs for water supply schemes?

5. Define : Detention time and surface overflow rate for a sedimentation tank.

6. What are tests to be done to find the residual chlorine in water?

7. Mention the type of aerators used in the water treatment.

8. Write any two effects of hardness in water.

9. What are the layouts of water distribution system?

10. What is 'Ferrule' in house service connection?

PART B — (5 × 16 = 80 marks)

11. (a) Explain the different sources of water and their characteristics with respect to turbidity, Hardness, Chloride and microbiology. (16)

Or

(b) (i) Write a note on water demand. (6)

(ii) In two periods each of 20 years a city has grown from 50000 to 110000 and 160000 find the population expected in the next 20 years and also the saturation population. (10)

12. (a) (i) What are the classification of intakes based on source also explain with a sketch any one of the intakes? (10)

(ii) What are the different pipe materials used in the water transmission? (6)

Or

(b) (i) List the classification of pipe joints depending their ability to movement and briefly explain the factors that influence the decision on the type of joints. (10)

(ii) Write a note on pumps used in water supplier. (6)

13. (a) (i) Draw the longitudinal section of a rectangular sedimentation tank indicating the various zones. (8)

(ii) The following data are corresponding to a clariflocculator find the volume of the flocculation and its diameter.

Detention time : 30 min, Depth : 3 m, Outer diameter of the inlet shaft = 0.9 m, Water to be treated : 10 ML/d. (8)

Or

(b) (i) With a neat sketch (cross section) explain the working of a rapid sound filter. (12)

(ii) Write a note on 'Break Point Chlorination'. (4)

14. (a) (i) What are the effects of excess concentration of Fluoride in water and list the methods available for defluoridation and explain any one of them. (10)

(ii) Write a note on iron removal from water for small communities. (6)

Or

(b) (i) What are the types of hardness present in water? (4)

(ii) Explain the Ion exchange method of water softening with a sketch. (12)

15. (a) (i) What are the general design guidelines for a water distribution system? (8)

(ii) Briefly explain the house service connection with a sketch. (8)

Or

(b) Find the equivalent pipe AD for the network ABCD shown in Fig Q15(b) by equivalent pipe method. (16)

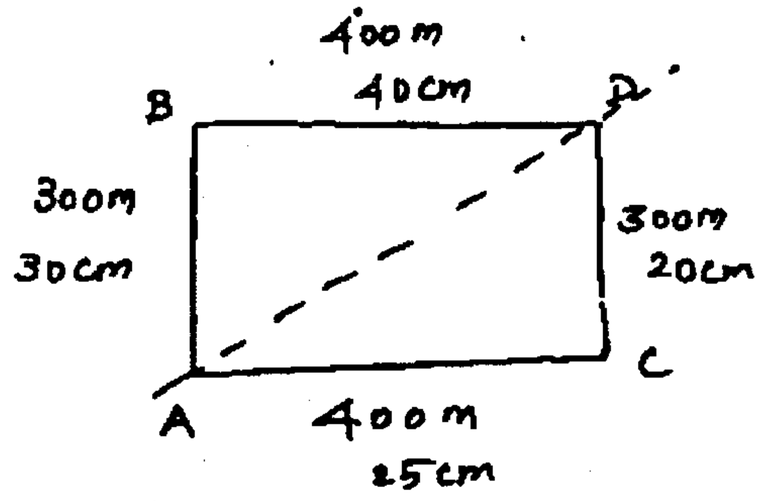

Fig. Q15(b)