Question Paper Code : **70292**

B.E./B.Tech. DEGREE EXAMINATIONS, NOVEMBER/DECEMBER 2021.

Fifth Semester

Civil Engineering

CE 6503 — ENVIRONMENTAL ENGINEERING – I

(Regulations 2013)

(Common to : PTCE 6503 — Environmental Engineering – I for B.E. (Part-Time) – Civil Engineering – Third Semester – (Regulations – 2014)

Time : Three hours   Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1.   Define Design Period.

2.   What are the components of public water supply scheme?

3.   List out the various joint's in cast iron pipes.

4.   How the corrosion of metal pipes is reduced?

5.   Define break point chlorination.

6.   Differentiate disinfection and sterilization.

7.   Why baffles are provided in the sedimentation tank in sewage treatment?

8.   What is sewage sickness and how it can be prevented?

9.   List out the methods to reduce wastage of water in a distribution system.

10.   List the requirements of good distribution system.

PART B — (5 × 13 = 65 marks)

11. (a) (i) The population of 5 decades from 1930 to 1970 are given in table. Find out the population after one, two and three decades beyond the last known decade by any 3 methods? (7)

Year : 1930 1940 1950 1960 1970

Population : 25000 28000 34000 42000 47000

(ii) Discuss the various factors that influence the water demand of a community. (6)

Or

(b) (i) Explain Membrane filter technique. (5)

(ii) What are the factors to be considered in the selection of source for a water supply scheme? How does the quality of ground water differ from surface water? (8)

12. (a) Explain the causes, effects and prevention methods of pipe corrosion in detail.

Or

(b) (i) Explain the points to be observed in selecting a pump. (5)

(ii) List the requirements of a good piping material. (8)

13. (a) (i) Estimate the alum and quick lime requirements with reactions involved to treat 100 MLD of water with raw water with alkalinity of 9 mg/L as $CaCO_3$ if the alum dosage adopted was 40 mg/L. (9)

(ii) Briefly explain the role of sedimentation tank in water treatment.(4)

Or

(b) A new township is to have a population of 5,00,000 and 90 Lpcd of water supply. Design a rapid sand filter unit with details of under drainage and water washing including gutter arrangement. Limit the maximum spent backwash water as 3.5%.

14. (a) Write short notes on : (6 + 7)

(i) Desalination process,

(ii) Membrane process.

Or

(b) (i) Explain the activated carbon treatments and pollutants removed and advantages of the process. (6)

(ii) Explain the techniques involved in de-fluoridization. (7)

15. (a) Analyse the pipe network shown below and tabulate the flow values in each of pipe. (13)
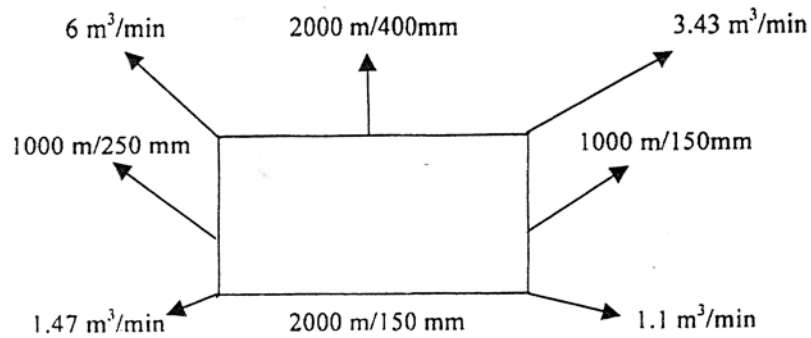
Or

(b) (i) Enumerate some of the appurtenances required for the pipes of water distribution networks. (7)

(ii) What are the requirements of good distribution system? (6)

PART C — (1 × 15 = 15 marks)

16. (a) Explain about the analysis of distribution networks in water distribution and supply to buildings.

Or

(b) Explain the principles of design of water supply in buildings.

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