III Sem B.E. CIVIL (New Course)
SUMMER 2015
ENVIRONMENTAL ENGINEERING - I

1. (a) Explain the importance and necessity of public water supply scheme. (6)

   (b) What is an Intake Structure ? List out the types of Intake Structure and state the requirements of a good Intake Structure. (7)

OR

2. (a) List out the various sources of water and explain any two. (6)

   (b) For the given data, forecast the population data after one, two and three decades beyond the last known decade by Incremental Increase method. (7)

Census	Population
1960	25000
1970	28000
1980	34000
1990	42000
2000	47000

3. (a) List out the various pipe joints used in Water Supply Scheme and explain socket and spigot joint . (6)

   (b) Determine hydraulic gradient for a pipe of diameter 1.6 m carrying water at a rate of 2.4 m^3/s. Take : f = 0.003. (7)

OR

4. (a) List out the various types of Pump used in water supply scheme and explain advantages and disadvantages of reciprocating pump. (6)

   (b) List out the types of pipe used in Water Supply Scheme and explain Cast Iron Pipe in detail. (7)

5. (a) Explain in brief the various characteristics of water. (7)

   (b) Design a cascade aerator for a capacity of 15 MLD. Draw a neat sketch and assume suitable data. (7)

OR

6. (a) Draw a flow sheet of conventional water treatment plant. Explain in brief function of each unit. (7)
   (b) What is optimum coagulant dose. How it is determined ? Explain its importance in water treatment. (7)

7. (a) Explain with a neat sketch, the working of a clariflocculator. (6)
   (b) Design a rapid sand filter for a population of 1,00,000 to be served and per capita water supply 270 lpcd. Assume suitable data. (7)

OR

8. (a) Classify the various filters and differentiate 'Slow sand filter' and 'Rapid sand filter'. (6)
   (b) Design a suitable plain sedimentation tank to treat 5 MLD of water. Also draw a neat sketch, of it. (7)

9. (a) What is disinfection ? What are the various methods of disinfection ? Explain any one. (6)
   (b) Explain the mass curve method to find capacity of reservoir ? (7)

OR

10. (a) Explain the various methods used in leakage detection in water pipe line. (6)
    (b) The waterwork of a town of population 50,000 has to meet its water demand at the rate of 270 lpcd. If the disinfection is to be done by bleaching powder having 40% available chlorine, determine the quantity of bleaching powder required per annum. The required dose of chlorine is 0.5 mg/l for disinfection. (7)

11. (a) What are the elements of solid waste management and explain it. (7)
    (b) Explain the various methods of Collection of Solid Waste. (7)

OR

12. (a) List out the various methods of disposal of solid waste and explain any one in detail. (7)
    (b) Explain transfer station and also state the requirements of transportation vehicle. (7)

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