

ENVIRONMENTAL ENGINEERING - I

1. (a) What are the various factors which directly affect per capita demand of a town and what do you understand by the term Fluctuation in water demand? (7)
- (b) The population of a town in 1950, 1960, 1970 and 1980 was 50,000, 60,000, 95,000 and 1,20,200 respectively. Estimate the population in 2010 by using Geometrical Increase Method. (7)

OR

2. (a) What is an intake structure? Enumerate the various types of intake structures and describe any one of them with a neat sketch. (7)
- (b) State and explain various underground water sources. (7)
3. (a) Explain the advantages and disadvantages of different types of pipes for conveyance of water. (6)
- (b) A storage reservoir is situated at a distance of 6 km from a city of 3 lakh population. The total loss of head from the source to the city is not to exceed 30 m. Taking the daily demand of 150 lit/ capita/ day, pumping is to be done for 12 hrs. only, determine the size of supply main by using Darcy-Weisbach Formula taking coefficient of friction as 0.015. (7)

OR

4. (a) Enlist various types of joints in pipe and explain with neat sketch, Flange Joint and Expansion Joint. (6)
- (b) In a water supply scheme to be designed for serving a population of 4 lakhs, the storage reservoir, is situated at 8 km away from the city and the loss of head from source to city is 16 meters. Calculate the size of supply main using Hazen Williams Formula. Assuming $C^H = 130$ in Hazen's Formula. (7)
5. (a) Name the various tests that are carried out during the examination of water before the treatment of water. Explain the purpose of any two. (6)

(b) Draw a flow diagram showing different units of conventional water treatment plant explain the function of each unit. (7)

OR

6. (a) Explain principle of coagulation. What are factors affecting choice of Coagulant ? (6)
(b) Explain with a neat sketch the working of 'Flash Mixer'. (7)
7. (a) What is sedimentation ? State and explain various factors affecting sedimentation. (7)
(b) Design a suitable plain sedimentation tank for a flow of 7 Million liters per day. (7)

OR

8. (a) Explain with neat sketch, the working of a clariflocculator. (7)
(b) State the different types of filters and explain Rapid Sand Filters with the help of neat sketch. (7)
9. (a) State various types of disinfectants used in water treatment. State advantages and disadvantages of Chlorine as disinfectant. (7)
(b) Write short notes on the following (any TWO):
(i) Plain Chlorination
(ii) Super Chlorination
(iii) Post Chlorination
(iv) De-Chlorination. (6)

OR

10. (a) What are the general considerations to be observed in the planning of distribution system ? (6)
(b) Describe with sketches different layouts of water distribution. (7)
11. (a) What is solid waste ? Classify the solid waste with their sources of generation. (7)
(b) Explain the various methods of treatment and disposal of solid wastes. (6)

OR

12. (a) Explain recycling and reuse of municipal solid waste. (6)
(b) Explain in detail : Sanitary landfill. (7)

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