

Third Semester B. E. (Civil) Examination

ENVIRONMENTAL ENGINEERING I

Time : Three Hours]

[Max. Marks : 80

- N. B. : (1) All questions carry marks as indicated.
 (2) All questions are compulsory.
 (3) Due credit will be given to neatness and adequate dimensions.
 (4) Illustrate your answers wherever necessary with the help of neat sketches.

1. (a) Explain the factors affecting per capita demand 6
 (b) The data given below shows details of population of city from year 1930-1970. Calculate the population for the year 1980, 1990 and 2000 by Arithmetic Increase Method.

Year	1930	1940	1950	1960	1970
Popul ⁿ	25000	28000	34000	42000	47000

7

OR

2. (a) What are the different sources of water ? Explain any two of these sources with neat sketch. 7
 (b) Describe with neat sketch of Reservoir Intake. 6

3. (a) A water supply scheme is to be designed for a city of population 500000. Calculate the size conveyance main. If the storage reservoir is 10 km away from city. Loss of head is 15 m. Assume per capita demand is 150 LPCD pump work for 12 hrs. in a day. Take $f = 0.04$ 7

(b) Explain the following with neat sketch :—

(i) Scour valve

(ii) Expansion joint. 6

OR

4. (a) Write a short note on Raising Main with labeled diagram. 6

(b) Explain with a neat sketch the working of centrifugal pump. 7

5. (a) Explain in brief the physical, chemical and bacteriological characteristics of water. 7

(b) Draw a flow sheet of conventional water treatment plant and explain in brief function of each unit. 7

OR

6. (a) Design a cascade aerator for a capacity of 10 MLD. Assume suitable data with a neat sketch. 7

(b) Explain with neat sketch of Jar Test. 7

7. (a) Derive an equation for settling velocity of discrete particles freely falling in a sedimentation tank. 7
- (b) Difference between slow sand filter and Rapid sand filter. 7

OR

8. (a) Write a short notes on Inlet and outlet arrangement in sedimentation tank. 7
- (b) A town having population 1.5 lac per capita demand being 180 lpcd. Determine number and size of Rapid sand filter unit. 7
9. (a) What are the requirements of good disinfectant and list the various disinfectantes used in water treatment plant. 7
- (b) Explain in detail Dead end system and grid iron system. 6
- OR
10. (a) Explain the Mass curve method to determine the storage capacity of reservoir. 7
- (b) Briefly explain break point chlorination with sketch. 6
11. (a) Discuss various methods of collection of solid waste. 6
- (b) Discuss the composition and sources of generation of municipal solid waste. 7

OR

12. (a) What are the points to be considered while selecting the site for sanitary land fill ? Explain. 6
- (b) List out the various methods of disposal of solid waste. Explain Sanitary land filling in detail. 7