



CBCS SCHEME

21CV43

Fourth Semester B.E./B.Tech. Degree Examination, June/July 2026 Public Health Engineering

Time: 3 hrs.

Max. Marks: 100

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

- 1 a. What are the various type of water demand? Explain them in brief. (10 Marks)
- b. List the different types of population forecasting method, explain briefly any one method. (10 Marks)

OR

- 2 a. Discuss the various factors which affect the per capita rate of demand of water. (10 Marks)
- b. The population census of a city is as shown in the following table. Estimate the expected Population of the city for 2041 and 2051 using geometrical increase and incremental increase methods. (10 Marks)

Year	1981	1991	2001	2011	2021
Population	90,000	1,30,000	1,70,000	2,30,000	2,85,000

Module-2

- 3 a. Define Aeration process. What are the objecting of aeration process? Explain any one type of aeration. (10 Marks)
- b. What is Sedimentation Process? Explain in brief the types of settling in sedimentation tank. (10 Marks)

OR

- 4 a. With the help of neat sketch, explain the operation of a rapid sand filter. (10 Marks)
- b. Design a set of three rapid sand filters for treating the water, which has to supply the water to a town of population 50,000. Per capita demand of the town is 180 lpcd. The rate of filtration of rapid sand filters may be taken as 5000 liters/hour/m² (10 Marks)

Module-3

- 5 a. What is disinfection of water? Explain the methods of disinfection in water supply treatment. (10 Marks)
- b. Briefly explain the Zeolite process of softening of water at water supply treatment. (10 Marks)

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and /or equations written eg, 42+8 = 50, will be treated as malpractice.

OR

- 6 a. Explain the types of sewage systems. With their advantages and disadvantages. (10 Marks)
- b. What is Sampling, explain the different methods of sampling. (10 Marks)

Module-4

- 7 a. Write a neat flow diagram of Municipal Waste Water Treatment Plant with significance of each unit. (10 Marks)
- b. Mention the modifications of activated sludge process and explain any two. (10 Marks)

OR

- 8 a. Explain with neat sketch the working of grit chamber in waste water. (10 Marks)
- b. Define the following:
- i) Hydraulic Retention time (HRT)
 - ii) Sludge age
 - iii) Volumetric BoD loading
 - iv) F/M Ratio
- (10 Marks)

Module-5

- 9 a. Explain with a neat sketch, the working of trickling filter. (10 Marks)
- b. Determine the depth, Volume of the filter media and the efficiency of treatment of a standard trickling filter from the following data:
- i) Quantity of settled sewage - 4.5×10^6 l/day
 - ii) BOD of raw sewage - 150 mg / lit.
 - iii) Rate of organic loading - $150 \text{ g/m}^3 / \text{day}$
 - iv) Rate of surface loading - $2000 \text{ l/m}^2 / \text{day}$
- (10 Marks)

OR

- 10 a. Explain with neat sketch, the different stages involved in the sludge digestion process. (10 Marks)
- b. Briefly explain Rotating Biological Contactors (RBC) and sludge drying beds. (10 Marks)
