



Fourth Semester B.E./B.Tech. Degree Examination, Dec.2024/Jan.2025
Public Health Engineering

Time: 3 hrs.

Max. Marks: 100

Note: 1. Answer any FIVE full questions, choosing ONE full question from each module.
2. Any missing data assumed suitably.

Module-1

- 1 a. Write the needs of protected water supply. (04 Marks)
- b. Briefly explain various types of water demands. (08 Marks)
- c. Briefly explain factors affecting Per Capita Demand. (08 Marks)

OR

- 2 a. Mention the methods of forecasting population and explain any two of them. (08 Marks)
- b. Write the physico-chemical characteristics of water. (06 Marks)
- c. Compute the population of the year 2000 and 2006 for a city where population in the year 1930 was 25,000 and in the year 1970 was 47000 using geometric increase method. (06 Marks)

Module-2

- 3 a. With the help of general flow diagram of water treatment plant, explain the function of each unit. (08 Marks)
- b. Explain the types of sedimentation. (06 Marks)
- c. Explain the methods of Aeration. (06 Marks)

OR

- 4 a. Define coagulation and flocculation and write the types of coagulants commonly used in water treatment. (06 Marks)
- b. A water work has to purify the water for a town whose daily demand is 9×10^6 lit/day. Design the suitable rectangular shape sedimentation tank of the water works filled with mechanical sludge remover. Assume the velocity of flow in the sedimentation tank as 0.22 m/sec and the detention time as 8 hours. (08 Marks)
- c. Write the comparison between a slow sand filter and rapid sand filter. (06 Marks)

Module-3

- 5 a. Explain the methods of disinfection. (08 Marks)
- b. With the help of graph, explain breakpoint chlorination. (06 Marks)
- c. Explain lime soda process and zeolite process for hardness removal. (06 Marks)

OR

- 6 a. Briefly explain methods of sewage disposal. (06 Marks)
- b. Briefly explain types of water carriage system. (08 Marks)
- c. Write the physical, chemical and biological characteristics of waste water. (06 Marks)

Module-4

- 7 a. With the help of general flow diagram of waste water treatment plant, explain the functions of each unit. (08 Marks)
- b. Explain the types of screen used in wastewater treatment. (06 Marks)
- c. Design a bar screen for a peak average flow of 40 MLD with the following data:
Angle of inclination = 45° to horizontal bar size 9 mm \times 50 mm, clear spacing 36 mm,
Desired velocity through the screen = 0.8 m/sec. (06 Marks)

OR

- 8 a. Explain unit operations and processes in waste water treatment. (04 Marks)
- b. With the help of neat sketch, explain circular type of settling tank. (08 Marks)
- c. With the help of flow diagram, explain the working of activated sludge process. (08 Marks)

CMRIT LIBRARY
BANGALORE - 560 037

Module-5

- 9 a. Explain impeded growth system and attached growth system in waste water treatment. (04 Marks)
- b. With the help of neat sketch, explain construction and working of trickling filter. (10 Marks)
- c. Explain the working of rotating biological contactors. (06 Marks)

OR

- 10 a. Write the advantages and disadvantages of stabilization ponds. (06 Marks)
- b. With the help of sketch, explain working of sludge drying beds. (08 Marks)
- c. Write the advantages and disadvantages of aerobic digestion. (06 Marks)

* * * * *