CBCS SCHEME

USN | | | | | | | | | | |

21CV43

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 detension 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 × 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)**

Module-5

9 a. Explain impended 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)**

* * * * *