

BACHELOR OF ENGINEERING (CIVIL ENGINEERING)THIRD YEAR SECOND

SEMESTER EXAM 2025

Sub: Water Supply Engg.

Subject Code Ex/CE/5/T/305/2025

Total Marks 100

Group A : Answer any four questions

4x15

1. Determine the future population for the year 2031 from the following data for a town; estimate by Geometrical increase and Incremental increase method.

Year	Population
1971	72,000
1981	80,000
1991	1,20,000
2001	1,70,000
2011	2,25,000

2. Derive the Stokes Law for a settling particle in laminar flow

Calculate the settling velocity for a particle of diameter 0.025mm and specific gravity 2.65 at temperature 25°C . Kinematic viscosity (ν) for water at 25°C may be taken as 0.01 cm²/sec.

3. Discuss the different mechanical, physical , and biological processes involved in filtration process.

What are the different types of filters in water treatment process.

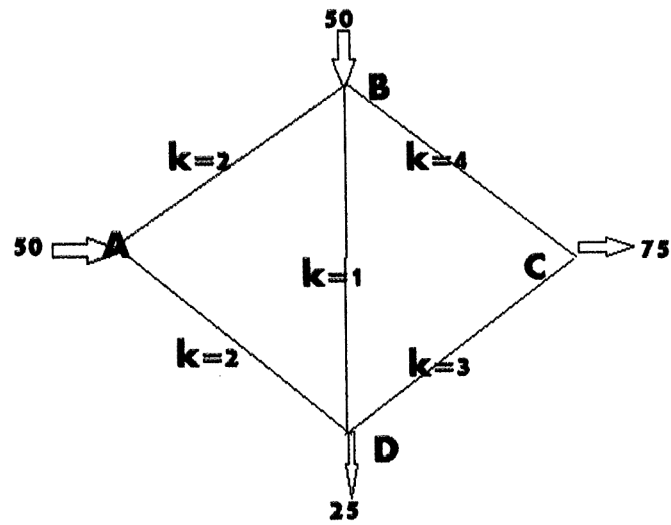
4. Discuss the different stages of Chlorination with showing graphically the different stages.

Laboratory data show that 99.9% kill of microorganisms in sample of water could be effected at a chlorine dose of 15mg/l with a contact time 10 min.

What should be the chlorine dose to obtain the same percentage of kill with a 20 min contact time ? take $n = 1.2$.

5. Determine the distribution of flow in each pipe network shown in the following Fig. for an inflow of 50 units at the junction A and 50 units at B and outflow of 75 units and 25 units at C and D respectively. The K values for different pipes are shown in the Fig.

[Turn over



6. The estimated hourly consumptions of water for a town for one day are given in the table. Determine the capacity of the distribution reservoir if the pump installed can supply the water in the reservoir at a uniform rate of 1.45 cu. m/sec

Time in hr	Consump. in Million litre /hr
1	2.45
2	2.25
3	2.14
4	2.30
5	2.55
6	2.60
7	3.50
8	5.25
9	6.10
10	6.55
11	7.25
12	7.35
13	7.55
14	6.35
15	5.95
16	5.75
17	5.65
18	7.45
19	7.30
20	7.25
21	5.65
22	4.50
23	3.70
24	2.85

Group B : Answer any four questions

4x10

7. Discuss the Bacteriological quality guideline for water in distribution system.
8. What are the different types of distribution network systems water supply line for a town / community. Review the merits and demerits of each system.
9. What are the factors governing the location of an intake . Discuss the factors
10. What is the acceptable limit for drinking water for followings
 - a) Turbidity (units in J.T,U) , b) pH , c) Iron as Fe (mg/l) , d) Arsenic as As (mg/l) , e) Nitrates (as NO_3) (mg/l)
11. Determine the quantity of alum required per day in order to treat 15 million litter of water per day at a treatment plant where by 'Jar test' the alum dose is fixed on 20PPM.
12. For a city of a population 1,50,000, find the followings
 - i) Total Domestic demand
 - ii) Fire demand
 - iii) Maximum hourly demand for the maximum day