Roll No.												

PRESIDENCY UNIVERSITY
BENGALURU
School of Engineering

Mid - Term Examinations - November 2024

Semester: 5th
Course Code: CIV2047
Course Name: Water Infrastructure Systems
Program: B. Tech

Date: 06-11-2024
Time: 02.00pm to 03.30pm
Max Marks: 50
Weightage: 25%

Instructions:
(i) Read all questions carefully and answer accordingly.
(ii) Do not write anything on the question paper other than roll number.

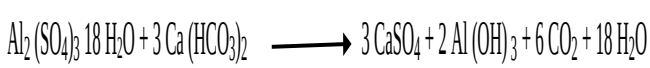
Part A

Answer ALL the Questions. Each question carries 2marks. **5Qx2M=10M**

1	Duty of an engineer in designing a water supply scheme for a particular section of community is to evaluate the amount of water available and amount of water demanded by the public and to design a water supply. What are the two objectives of the community water supply scheme?	**2 Marks**	**L1**	**CO1**
2	Design period is the utility or useful life period of a component, during this period component should offer best service without failure. Write the design periods for four different components of water supply scheme.	**2 Marks**	**L1**	**CO1**
3	Sedimentation tank are designed to reduce flow velocity which makes particles to settle at bottom of the tank. List the types of settling.	**2 Marks**	**L1**	**CO2**
4	What is the fire demand for a town of population 1 lakh? Assuming that one fire accident breakout per month and which last for 5 hrs. Use national board of fire underwriter's formula and express fire demand in lpcd.	**2 Marks**	**L1**	**CO1**
5	A water treatment plant has a flow rate of 0.6 m3/sec. The settling basin at the plant has an effective settling volume that is 20 m length, 3 m depth and 6 m wide. Will particles that have a settling velocity of 0.003 m/sec be completely removed? If not, what percent of the particles will be removed?	**2 Marks**	**L1**	**CO2**

Part B

Answer ALL Questions. Each question carries 10 marks. **4QX10M=40M**

6	Physical water quality is defined as those characteristics of water which respond to the senses of sight, touch, smell, taste and feel. Illustrate any two Physical parameters.	**10 Marks**	**L2**	**CO1**
	Or			
7	The future period for which a provision is made in the water supply scheme is known as the design period. Outline the factors affecting design period.	**10 Marks**	**L2**	**CO1**
8	Water available in various sources contains various types of impurities and cannot be directly used by the public for various purposes, before removing the impurities. For potability water should be free from unpleasant tastes, odours and must have sparkling appearance. The water must be free from disease-spreading germs. The amount and type of treatment process will depend on the quality of raw water and the standards of quality of raw water and the standards of quality to be required. Explain treatment of surface water.	**10 Marks**	**L2**	**CO2**
	Or			
9	In plain sedimentation process suspended impurities like silt, clay and sand etc. are removed. Outline the factors which influence the sedimentation.	**10 Marks**	**L2**	**CO2**
10	The type and amount of water treatment will depend on the quality of raw water and the standards of quality of raw water and the standards of quality to be required. Construct the flow chart for ground water treatment.	**10 Marks**	**L3**	**CO2**
	Or			
11	If 8 mg/l of alum dose is added to 5 MLD of water. Identify the total amount of alum added per day and the amount of hardness imparted to the water in terms of kg/day using the following chemical equation. 	**10 Marks**	**L3**	**CO2**

12 The following data have been noted from census department **10 Marks L3 CO1**

Year	Population
1990	18000
2000	28000
2010	36000
2020	45500

Identify the probable population in the year 2030, 2040 and 2050 using Incremental increase method

Or

13 The following data have been noted from census department **10 Marks L3 CO1**

Year	1994	2004	2014	2024
population	8000	12000	17000	22500

Identify the probable population in the year 2034, 2044 and 2054 using Arithmetic increase method