U.S.N.										

B.M.S. College of Engineering, Bengaluru-560019

Autonomous Institute Affiliated to VTU

October 2024 Supplementary Examinations

Programme: B.E. **Semester: IV**
Branch: Civil Engineering **Duration: 3 hrs.**
Course Code: 23CV4PCENV **Max Marks: 100**
Course: Environmental Engineering I

Instructions: 1. Answer any FIVE full questions, choosing one full question from each unit.
2. Missing data, if any, may be suitably assumed.

Important Note: Completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages. Revealing of identification, appeal to evaluator will be treated as malpractice.

			CO	PO	Marks
		UNIT – I			
1	a	Predict the population for the year 2021, 2031, and 2041 from the following population data using incremental increase method. Year: 1961 | 1971 | 1981 | 1991 | 2001 | 2011 Population: 8,58,545 | 10,15,672 | 12,01,553 | 16,91,538 | 20,77,820 | 25,85,862	CO 1	PO3	7
	b	Enumerate the factors affecting percapita demand	CO1	PO1	7
	c	Explain variation in water demand .	CO1	PO1	6
		UNIT – II			
2	a	Compare surface and subsurface source of water with reference to their quality and quantity for domestic purpose.	CO2	PO2	10
	b	Define Intake structure. Enumerate the factors to be considered in selecting a suitable site for the intake structure.	CO2	PO1	10
		OR			
3	a	Water is pumped from a river 3km away from the reservoir. Maximum difference of levels of water in river and the reservoir is 20m. Population of the town is 50,000 and percapita water demand is 120lpcd. If the pumps are to operate for a total of 8hrs and the efficiency of pumps is 80%, determine the HP of the pumps,. Assume friction factor as 0.03, velocity of flow as 2m/sec and maximum daily demand as 1.5 times the average daily demand,	CO2	PO3	12
	b	Enumerate safe water, wholesome water, potable water and palatable water	CO2	PO1	08
		UNIT - III			
4	a	Explain the purpose of aeration in water treatment. Also enumerate the any four methods of aeration with rough sketch.	CO2	PO1	12
	b	Determine the quantity of alum required in order to treat 13MLD at a treatment plant, where 12ppm of alum dose is required. Also determine the amount of carbon do oxide gas which will be released per liter of water treated.	CO2	PO3	08
		OR			

	5	a	Compare slow and rapid sand filters.	***CO***2	***PO1***	**06**
		b	With a neat sketch, explain the working principle of circular sedimentation tank	***CO***2	***PO1***	**10**
		c	A rectangular settling tank without mechanical equipment is to treat 1.8 MLD of raw water. Sedimentation period is to be 4hrs, the velocity of flow 8cm/min, and the depth of water and sediment is 4.2m.If an allowance of 1.2m for sediment is made, what should be the length and width of the basin.	***CO2***	***PO3***	**04**
			UNIT – IV			
	6	a	Enumerate any five methods of disinfection.	***CO***3	***PO1***	**10**
		b	Compare Microfiltration, Ultrafiltration, Nanofiltration and Reverse Osmosis.	***CO***3	***PO1***	**10**
			UNIT – V			
	7	a	With the help of neat sketch illustrate layouts of different water distribution networks.	***CO***3	***PO1***	**10**
		b	With the help of neat sketch illustrate the house water connection and explain important water connection fittings.	***CO***3	***PO1***	**10**

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