U.S.N.										

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

Autonomous Institute Affiliated to VTU

July 2024 Semester End Main Examinations

Programme: B.E. **Semester: V**
Branch: Civil Engineering **Duration: 3 hrs.**
Course Code: 22CV5PCENV **Max Marks: 100**
Course: Environmental Engineering - II

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)		Explain the factors affecting the quantity of sewage flow.	CO1	*PO1*	**06**
	b)		Enumerate types of sewerage system with advantages, disadvantages and suitability	CO1	*PO1*	**08**
	c)		Calculate the velocity of flow in a sewer of diameter 100cm laid in a slope of 1:1000. What will be the discharge when running half full? Assume, n = 0.013	CO1	*PO1*	**06**
			UNIT - II			
2	a)		Explain different sewer testing methods.	CO2	*PO1*	**06**
	b)		Explain the process of laying of sewer with sketch.	CO2	*PO1*	**08**
	c)		Explain the factors to be considered in selecting sewer material.	CO2	*PO1*	**06**
			UNIT - III			
3	a)		Briefly explain the physical and chemical characteristics of domestic sewage.	CO2	*PO1*	**12**
	b)		Explain with neat diagram the various zones of self purification of stream.	CO2	*PO1*	**08**
			OR			
4	a)		If 6 days 15^o BOD of a sewage sample is 250mg/l. what will be its 10 day 25^o BOD. Take K(20) = 0.1/day, θ = 1.047.	CO2	*PO1*	**06**
	b)		Explain Effluent disposal standards for inland surface water as per IS 2490	CO2	*PO1*	**06**
	c)		With neat sketch explain oxygen sag curve.	CO2	*PO1*	**08**
			UNIT - IV			
5	a)		Explain with neat flow diagram, the importance of different units of municipal wastewater treatment plant	CO2	*PO1*	**10**

		b)	With a neat sketch explain construction and working of a trickling filter.	CO2	*PO1*	**10**
			OR			
	6	a)	An average operating data for a conventional activated sludge treatment plant is as follows: Wastewater flow = 50000 m^3/d, Volume of aeration tank = 15500 m^3, influent BOD = 200 mg/L, Effluent BOD = 25 mg/L, MLSS = 3000 mg/L, Effluent suspended solids = 40 mg/L, Waste sludge suspended solids = 12000 mg/L, Quantity of waste sludge = 250 m^3/d. Determine (i) Aeration period (ii) Food to Microorganism ratio (iii) Percentage efficiency of BOD removal (iv) Sludge age.	*CO3*	*PO1*	**08**
		b)	With neat diagram explain the working of Activated Sludge Process	*CO3*	*PO1*	**08**
		c)	Explain the process involved in skimming tank.	*CO3*	*PO1*	**04**
			UNIT - V			
	7	a)	Compare SBR, MBBR and MBR	*CO3*	*PO1*	**10**
		b)	Write a note on Nitrogen and Phosphorous removal from wastewater.	*CO3*	*PO1*	**10**

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