U.S.N.										

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

Autonomous Institute Affiliated to VTU

August 2024 Supplementary Examinations

Programm: B.E. **Semester: V**
Branch: Civil Engineering **Duration: 3 hrs.**
Course Code: 20CV5PCWWT **Max Marks: 100**
Course: Wastewater Treatment

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 necessity and importance of sanitation	*CO1*	*PO1*	**6**
	b)		Calculate the velocity of flow and corresponding discharge in a sewer of the circular section having a diameter 1.0 m laid at a gradient of 1 in 500. Th sewer runs at 0.6 depth. Take N = 0.012.	*CO1*	*PO1*	**6**
	c)		What is conservancy system of sanitation? Bring out the merits and demerits of this system	*CO1*	*PO1*	**8**
			UNIT - II			
2	a)		Explain in detail the ventilation and testing of sewers.	*CO2*	*PO1*	**6**
	b)		Explain the various types of materials used for sewer construction.	*CO2*	*PO1*	**6**
	c)		Briefly explain the laying of sewer.	*CO2*	*PO1*	**8**
			UNIT - III			
3	a)		Explain the physical, chemical and biological characteristics of wastewater	*CO3*	*PO1*	**10**
	b)		With neat sketch explain oxygen sag curve	*CO3*	*PO1*	**10**
			OR			
4	a)		Explain with diagram, the various zones of self-purification of stream.	*CO3*	*PO1*	**10**
	b)		A town discharges 120 cumec of sewage into a river having a rate of flow of 1600 cumec during lean period with a velocity of 0.1 m/s. The 5-day BOD of sewage at the given temperature is 250 mg/L. Find the amount of critical deficit, and when and where it will occur in the downstream portion of the river. Assume the deoxygenation constant as 0.1 day $^{-1}$ and self-purification constant as 3.5. Saturation DO at a given temperature is 9.2 mg/L.	*CO3*	*PO1*	**10**

			UNIT - IV			
	5	a)	Explain with neat flow diagram, conventional sewage treatment plant. Explain the functions of each component.	*CO3*	*PO1*	**10**
		b)	With neat diagram, explain the working principle of trickling filter	*CO3*	*PO1*	**10**
			OR			
	6	a)	With neat diagram, explain the working principle of Activated sludge process.	*CO3*	*PO1*	**10**
		b)	With the help of neat sketch discuss the principles involved in working of Grit chamber and skimming tank	*CO3*	*PO1*	**10**
			UNIT - V			
	7		Explain Briefly the following			
		a)	Reverse osmosis	*CO3*	*PO1*	**5**
		b)	Nano Filtration	*CO3*	*PO1*	**5**
		c)	Ultra-Filtration	*CO3*	*PO1*	**5**
		d)	Microfiltration	*CO3*	*PO1*	**5**

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