U.S.N.										

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

Autonomous Institute Affiliated to VTU

June 2025 Semester End Main Examinations

Programme: B.E. **Semester: IV**

Branch: Civil Engineering **Duration: 3 hrs.**

Course Code: 19CV4PCWSE **Max Marks: 100**

Course: Water Supply Engineering

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.

		UNIT - I	*CO*	*PO*	Marks
1	a)	Elucidate the impact of various human activities on pollution of water bodies.	*CO1*	*PO1 PO2*	**10**
	b)	Assess the factors that influence per capita demand of water.	*CO1*	*PO1 PO2*	**10**
		OR			
2	a)	Evaluate the requirement of water for different beneficial uses across various sectors.	*CO1*	*PO1 PO2*	**10**
	b)	Analyze the different categories of water demand and their relative significance.	*CO1*	*PO1 PO2*	**10**
		UNIT - II			
3	a)	Explicate the critical factors involved in selecting a suitable site for an intake structure.	*CO1*	*PO1 PO2*	**10**
	b)	Evaluate the parameters affecting the selection of pumps in a water supply system.	*CO1*	*PO1 PO2*	**10**
		OR			
4	a)	Examine the quality, quantity, availability, pollution risk, treatment needs, storage, extraction costs, environmental impact, and management of surface and subsurface water sources for sustainable usage.	*CO1*	*PO1 PO2*	**10**
	b)	Elucidate the functionality and application of various pipe appurtenances in water distribution networks.	*CO1*	*PO1 PO2*	**10**

			UNIT - III			
	5	a)	Analyze the physical, chemical, and biological characteristics of water in relation to public health and water treatment.	*CO2*	*PO1 PO2*	**10**
		b)	Explicate the standard precautions required during water sample collection for laboratory analysis.	*CO2*	*PO1 PO2*	**10**
			OR			
	6	a)	Examine the distinctions between safe, potable, wholesome, and palatable water with relevant examples.	*CO2*	*PO1 PO2*	**10**
		b)	Assess the health implications and permissible limits of the following contaminants in drinking water: i. Fluoride ii. Nitrate iii. Arsenic iv. Hexavalent Chromium v. Mercury	*CO2*	*PO1 PO2*	**10**
			UNIT - IV			
	7	a)	Analyze the process flow of a water treatment plant and evaluate the function of each treatment unit.	*CO3*	*PO6 PO10*	**10**
		b)	Assess the purpose and procedure of conducting a jar test with an illustrative sketch.	*CO3*	*PO6 PO10*	**10**
			OR			
	8	a)	Examine the operational mechanism of aerators and elucidate different types using appropriate diagrams.	*CO3*	*PO6 PO7*	**10**
		b)	Assess the effectiveness of plain sedimentation versus coagulant-aided sedimentation.	*CO3*	*PO6 PO7*	**10**
			UNIT - V			
	9	a)	Assess common operational issues in filter systems and suggest applicable mitigation strategies.	*CO3*	*PO6 PO10*	**10**
		b)	Explicate the following types of chlorination: i. Pre-chlorination ii. Post-chlorination iii. Super-chlorination iv. Double chlorination v. Breakpoint chlorination	*CO3*	*PO6 PO7*	**10**
			OR			
	10	a)	Assess available methods for water conservation and integrated water resource management.	*CO3*	*PO7 PO12*	**10**
		b)	Examine the differences between microfiltration, ultrafiltration, nanofiltration, and reverse osmosis in terms of pressure requirement, pollutant removal, and membrane pore size.	*CO3*	*PO7 PO12*	**10**

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