U.S.N.										

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

Autonomous Institute Affiliated to VTU

August 2024 Semester End Main Examinations

Programme: B.E. **Semester: IV**
Branch: Chemical Engineering **Duration: 3 hrs.**
Course Code: 23CH4PCPCM **Max Marks: 100**
Course: Pollution Control and Management

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)		Briefly discuss the importance of water as a resource and explain the key parameters of drinking water quality as per IS 10500 standards.	*CO* 1	*PO6*	**10**
	b)		Discuss the different sources of water pollution and emphasize their impact on human health.	*CO* 1	*PO 6*	**10**
			UNIT - II			
2	a)		Explain the purpose and importance of primary treatment in processing wastewater.	*CO* 2	*PO2*	**08**
	b)		A wastewater sample has a BOD of 200 mg/L and a COD of 400 mg/L. Calculate the biodegradability of the wastewater.	*CO* 3	*PO6*	**06**
	c)		Compare and contrast activated sludge process with trickling filter for secondary wastewater treatment.	*CO* 3	*PO6*	**06**
			OR			
3	a)		List the function of different types of diffusers used in waste water treatment and describe the challenges associated with sludge treatment and disposal.	*CO 2*	*PO 2*	**10**
	b)		A wastewater treatment plant receives 10,000 m^3/day of municipal wastewater. Draw a process flow diagram of a complete wastewater treatment plant considering primary, secondary and tertiary treatment stages. Briefly explain the functions of each stage.	*CO 3*	*PO 6*	**10**
			UNIT - III			
4	a)		Briefly describe the working principle of reverse osmosis for tertiary wastewater treatment.	*CO* 4	*PO 7*	**04**
	b)		Explain the biological process of nitrification-denitrification for nitrogen removal in wastewater treatment.	*CO* 4	*PO7*	**06**

		c)	Tabulate the advantages and limitations of using activated carbon for tertiary wastewater treatment.	***CO*** 3	***PO 6***	**10**
			UNIT - IV			
	5	a)	Categorize air pollutants based on their origin with examples and emphasize the impact of air pollution on human health, vegetation, and materials.	***CO*** 5	***PO12***	**10**
		b)	Explain the working of any two instruments used for measuring noise levels.	***CO*** 5	***PO 12***	**10**
			UNIT - V			
	6	a)	Define municipal solid waste and categorize it based on its source. Provide examples for each category.	***CO*** 5	***PO 12***	**10**
		b)	Discuss the environmental implications associated with improper E-waste management and explain the concept of Extended Producer Responsibility (EPR) in E-waste management.	***CO*** 5	***PO 12***	**10**
			OR			
	7	a)	Summarize the key regulations outlined in the Hazardous Waste (Management and Handling) Rules, 2003.	***CO*** 5	***PO 12***	**06**
		b)	Explain the E-waste Management Rules (2015) need to be followed in India.	***CO5***	***PO 12***	**06**
		c)	Briefly explain the concept of "Reduction in the use of hazardous substances" and its role in E-waste management.	***CO*** 5	***PO 12***	**08**

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