Enrolment No./Seat No_____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE- SEMESTER–VI (NEW) EXAMINATION – WINTER 2024

Subject Code:3160513 Date:28-11-2024

Subject Name:Waste Water Engineering

Time:02:30 PM TO 05:00 PM Total Marks:70

Instructions:

1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**
4. **Simple and non-programmable scientific calculators are allowed.**

			MARKS
Q.1	(a)	Define 1) Equalization 2) Neutralization 3) Strength Reduction	03
	(b)	Explain the four stages of wastewater treatment process	04
	(c)	State and discuss the major issues associated with industrial wastewater.	07
Q.2	(a)	Explain 1) Sedimentation 2) Coagulation 3) Flocculation	03
	(b)	Explain Activated Sludge Process with a neat diagram	04
	(c)	Explain Anaerobic Filters and Oxidation ditches with neat diagrams of each	07
		OR	
	(c)	Differentiate between Activated sludge unit and Trickling filter	07
Q.3	(a)	Draw process flow sheet of textile industry and list the points of generation of wastewater.	03
	(b)	Enlist various types of screens and describe coarse screens used in waste water treatment?	04
	(c)	Explain Upflow Anaerobic Sludge Blanket Reactor (UASB) with a neat diagram and detailed description of its construction and working.	07
		OR	
Q.3	(a)	Discuss Aerated lagoons	03
	(b)	Explain a Sequential Batch Reactor	04
	(c)	Explain Rotating Biological Contactor (RBC) with a neat diagram and detailed description of its construction and working.	07
Q.4	(a)	Explain the difference between aerobic and anaerobic wastewater treatment processes	03
	(b)	Can reclaimed wastewater be useful for underground water recharge? Explain the reason for the same	04
	(c)	Describe the following technologies in detail: 1. Duckweed Pond 2. Vermiculture 3. Root Zone technology	07
		OR	
Q.4	(a)	State the difference between anaerobic fixed film reactor and anaerobic fluidized bed reactor	03

	(b)	State the methodologies for wastewater reclamation and explain any two in brief.	04
	(c)	Discuss the Indian standards for disposal of treated wastewater on land	07
Q.5	(a)	Explain the characterization of wastewater on the physical, chemical and biological parameters	03
	(b)	Discuss the significance of stabilization ponds.	04
	(c)	Explain the wastewater treatment scheme for dyes and intermediate industries.	07

OR

Q.5	(a)	Explain the effect of pH and temperature on anaerobic wastewater treatment	03
	(b)	List the wastewater generation points and discuss them in brief.	04
	(c)	Explain the wastewater treatment scheme for sugar industries.	07

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