Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE – SEMESTER- V EXAMINATION-SUMMER 2023

Subject Code: 3151303 Date: 26/06/2023

Subject Name: Physico-chemical Treatment Technology

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)**	Give classification for types of wastewaters	**03**
	(b)	Define for terminology used for statistical analysis of wastewater flows	**04**
	(c)	Derive the expression for terminal settling velocity with clearly mentioning the assumptions	**07**
Q.2	**(a)**	Show with the help of a neat sketch various parts of bar rack screen	**03**
	(b)	Produce a neat sketch of aerated grit chamber	**04**
	(c)	Differentiate: Coagulation and Flocculation	**07**
		OR	
	(c)	Classify Filtration equipment	**07**
Q.3	**(a)**	Describe the purpose of disinfection. Compare the same with sterilisation	**03**
	(b)	Discuss in brief Cylinder test for settling	**04**
	(c)	Explain with the kinetic equations Chick's law	**07**
		OR	
Q.3	**(a)**	Enlist the methods and mechanisms for disinfection	**03**
	(b)	Explain Jar test apparatus in detail. Show how the results of the shame are helpful	**04**
	(c)	Show with the help of a neat sketch break point chlorination	**07**
Q.4	**(a)**	Explain how to estimate the bulk density of sludge	**03**
	(b)	Summarize the sources of sludge	**04**
	(c)	With the help of a neat sketch, show various mechanisms for filtration	**07**
		OR	
Q.4	**(a)**	Explain design of sludge drying bed	**03**
	(b)	Enlist various methods of dewatering	**04**
	(c)	Describe the chemistry for metallic coagulants	**07**
Q.5	**(a)**	List the various filtration devices used for sludge dewatering	**03**
	(b)	Explain chemical conditioning in brief	**04**
	(c)	Explain analysis of discrete settling in detail	**07**
		OR	
Q.5	**(a)**	Write about Elutriation	**03**
	(b)	Compare aerbic digestion and anaerobic digestion	**04**
	(c)	Explain analysis of flocculant settling in detail	**07**

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