

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER-IV EXAMINATION – SUMMER 2025

Subject Code:3141309

Date:12-05-2025

Subject Name: Fundamentals of Wastewater Quality

Time: 10:30 AM TO 01:00 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: binary mixture, vapor pressure, osmosis	03
(b) What is the significance of dissolved oxygen in water and wastewater?	04
(c) Explain standard procedure for determining acidity of wastewater sample.	07
Q.2 (a) List properties of organic compounds.	03
(b) Explain phenomena of diversion Ion effect with suitable examples.	04
(c) Explain the importance of following chemicals used in BOD test: CaCl ₂ , FeCl ₃ , MgSO ₄ , NH ₄ CL, K ₂ HPO ₄ , Na ₂ HPO ₄ & KH ₂ PO ₄	07
OR	
(c) Explain standard procedure to determine oil and grease of wastewater sample in laboratory.	07
Q.3 (a) Explain the principle of dialysis with neat sketch.	03
(b) Explain any one class of binary mixture with neat figure.	04
(c) Classify the types of alcohols and explain each with example.	07
OR	
Q.3 (a) Explain the significance of Colloids in environment.	03
(b) Explain the terms: Extracellular enzymes and intracellular enzymes. Identify the factors that affect the performance of enzyme activity in biochemical reaction.	04
(c) Describe the Brownian movement and Tyndall effect	07
Q.4 (a) Define with suitable examples: (i) Primary alcohol (ii) Secondary alcohol (iii) tertiary alcohol.	03
(b) What is importance of determining volatile acids in anaerobic treatment.	04
(c) List types of detergents. Explain in detail biological degradation of Detergents.	07
OR	
Q.4 (a) Enlist different chemical reactions by which saturated hydrocarbons are formed. Explain any one with example.	03
(b) List the sources of sulphate and oil and grease in wastewater.	04
(c) Explain hydrolysis and hydrogenation of fats and Oil.	07
Q.5 (a) Explain the procedure of DO fixation in wastewater sample at site.	03
(b) Summarize application of COD and BOD data in environmental engineering field.	04
(c) Explain modified Winkler method for DO determination.	07
OR	
Q.5 (a) Why is the BOD test performed for 5 days only?	03
(b) Summarize significance of phosphorous in water and wastewater.	04
(c) Explain the standard procedure for determining COD of wastewater sample.	07
