

GUJARAT TECHNOLOGICAL UNIVERSITY**BE- SEMESTER- VI EXAMINATION – SUMMER 2026****Subject Code:3161304****Date:08-06-2026****Subject Name:Biological Processes for Wastewater Treatment****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) State the purpose of Biological Waste-Water Treatment.	03
	(b) Draw and explain BOD progression curve.	04
	(c) Explain the mechanism by which substrate removal takes place in suspended growth process.	07
Q.2	(a) What do you mean by ThOD? Determine the ThOD of Glucose.	03
	(b) Define: (1) Specific growth rate (2) Yield coefficient (3) Endogenous decay coefficient (4) Maximum substrate utilization rate constant	04
	(c) Explain role of microorganisms in wastewater treatment.	07
	OR	
	(c) Enlist and explain the factors affecting the BOD test.	07
Q.3	(a) Discuss the problems of bulking and foaming of sludge in ASP	03
	(b) Explain single stage and two stage trickling filter with sketch.	04
	(c) Explain working of rotating biological contactor with the help of a neat sketch.	07
	OR	
Q.3	(a) Write a short note on Bio-towers.	03
	(b) How step aeration is differed than tapered aeration in ASP?	04
	(c) Explain the difference between oxidation ditch & oxidation pond.	07
Q.4	(a) Differentiate between: step aeration and tapered aeration in ASP.	03
	(b) Explain in detail how nitrifying bacteria affect the BOD test result? What should be done to overcome its effect?	04
	(c) Write down the mass balance for CFSTR with recycle and hence Derive the equation for finding biokinetic constant.	07
	OR	
Q.4	(a) Write down the applications of RBC.	03
	(b) Give the difference between Coarse bubble and fine bubble diffused aeration.	04
	(c) Write down the mass balance for CFSTR without recycle and hence Derive the equation for finding biokinetic constant.	07
Q.5	(a) Write a short note: constructed wetlands.	03
	(b) Write a brief note: Root zone treatment.	04
	(c) Discuss the mechanism of working of UASB with neat sketch.	07
	OR	
Q.5	(a) Enlist the different types of natural treatment systems used for small community.	03
	(b) Enlist the major problems faced by small communities to treat the domestic wastewater	04
	(c) Write down the fundamental mechanism of anaerobic digestion with Process description & Microbiology.	07
