

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER– VII (NEW) EXAMINATION – WINTER 2021****Subject Code:2171306****Date:03/12/2021****Subject Name:Wastewater Engineering****Time:02:30 PM TO 05:30 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 the following terms: (a) TDS (b) BOD (c) COD.	03
	(b) Differentiate between municipal wastewater and industrial wastewater.	04
	(c) Write a short note on “Natural evaporation” as a treatment of wastewater.	07
Q.2	(a) Define the following terms: (i) Sludge volume index, (ii) Mean cell residence time and (iii) Mixed liquor suspended solids	03
	(b) Explain the following terms:	04
	1) Detention time	2) Surface Loading Rate
	3) Weir Loading Rate	4) Organic Loading
	(c) Explain the activated sludge process.	07
OR		
(c) Draw neat sketch of trickling filter and explain its working.	07	
Q.3	(a) Why biological treatment is necessary for wastewater?	03
	(b) Write a short note on rotating biological contactors.	04
	(c) Write short note on sludge drying beds.	07
OR		
Q.3	(a) Explain the function and purpose of secondary sedimentation in a wastewater treatment plant.	03
	(b) Differentiate between standard rate and high rate digester.	04
	(c) State the purpose of filter presses. Enlist and explain the types of filter presses.	07
Q.4	(a) Write short note on COD test.	03
	(b) State the design criteria of a flash mixer.	04
	(c) Explain the UASB process with its design criteria.	07
OR		
Q.4	(a) Discuss the formation of slime layer in trickling filter.	03
	(b) Explain coagulation process and its application for wastewater treatment.	04
	(c) Write short note on sludge digestion process.	07
Q.5	(a) Enlist and explain operational problems of screens.	03
	(b) Explain the equalization process in a wastewater treatment plant.	04
	(c) Draw a complete flow diagram of wastewater treatment plant and describe the functions of each units of wastewater treatment plant.	07

OR

- Q.5** (a) Prepare a list of sludge dewatering devices and explain anyone with a neat sketch. **03**
- (b) Differentiate between diffused aeration and mechanical aeration. **04**
- (c) Write short note on sequencing batch reactor. **07**
