

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER–VI (NEW) EXAMINATION – SUMMER 2023****Subject Code:3160513****Date:10-07-2023****Subject Name:Waste Water Engineering****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) Discuss: Waste water.	03
	(b) Discuss the various source of Waste water.	04
	(c) List out the physical characteristics of the waste water and state their environment significance.	07
Q.2	(a) Explain Coagulation and flocculation in waste water treatment.	03
	(b) Discuss various types of Screens used for waste water treatment.	04
	(c) Discuss the various stages of waste water treatment methods in brief.	07
	OR	
	(c) Discuss the reasons for collecting data through sampling. What standards should apply while obtaining data by sampling?	07
Q.3	(a) Discuss waste water generation points in oil refineries.	03
	(b) Discuss in detail about volume and strength reduction of waste water.	04
	(c) Discuss about the working principle of oxidation ditch with advantages and disadvantages using a typical process flow diagram.	07
	OR	
Q.3	(a) Give brief about sequential batch reactor.	03
	(b) Describe working of anerobic fixed film reactor.	04
	(c) Describe principle and working of Up flow Anaerobic Sludge Blanket (UASB) reactor for waste water treatment.	07
Q.4	(a) Write about Root zone technology for waste water treatment.	03
	(b) Explain Vermiculture technology for waste water treatment.	04
	(c) Give detail classification of biological treatment processes and their uses for waste water treatment.	07
	OR	
Q.4	(a) Which types of impurities can be intricate in waste water from pulp and paper industry?	03
	(b) Mention design steps for Activated Sludge Process.	04
	(c) Discuss waste water reclamation and reuse in detail.	07
Q.5	(a) Write method and importance of neutralization used for waste water treatment.	03
	(b) Discuss recent technologies used for color removal of Dye industry waste water.	04
	(c) Write in detail about the factors affecting the anaerobic waste water treatment.	07
	OR	
Q.5	(a) Discuss working of trickling filters used for waste water treatment.	03
	(b) Discuss Indian standards for disposal of treated wastewaters on land and in natural streams.	04
	(c) With neat flow diagram, describe the waste water treatment process in Textile industry.	07
