

Enrollment No./Seat No.:

GUJARAT TECHNOLOGICAL UNIVERSITY

Bachelor of Engineering - SEMESTER - VII EXAMINATION - SUMMER 2025

Subject Code: 117AB01

Date: 30-05-2025

Subject Name: Design and Operation of Industrial Wastewater Treatment Process

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.

	Marks
Q.1 (a) Define Coagulation, Flocculation and Sedimentation	03
(b) What are grit chambers used for ? Also give difference between screen chamber and grit chamber	04
(c) Explain Trickling Filter with a neatly labelled sketch with its construction , working and application in detail	07
Q.2 (a) What does high rate sedimentation technology mean? Where is it used ?	03
(b) State difference between aerobic and anaerobic process.	04
(c) Discuss the design of a Clari-flocculator in detail with a neat sketch	07
OR	
(c) Describe the design of a filter media for fast sand filtration with a neat sketch of the same.	07
Q.3 (a) What is meant by sludge stabilization. Describe in brief	03
(b) Describe the kinetics of Biological growth	04
(c) Explain the design of an Activated Sludge process in detail with a neat sketch.	07
OR	
(a) State the impact of industrial pollution on the environment	03
(b) How is Industrial pollution characterized?	04
(c) Explain in detail about the High rate Anaerobic Treatment Process.	07
Q.4 (a) Discuss the magnitude of the industrial pollution in today's world.	03
(b) State different processes used in the tertiary treatment of industrial wastewater and explain any one in detail.	04
(c) State the different steps of treating Industrial wastewater and explain them in detail	07
OR	
(a) How does the industrial wastewater treatment differ from the domestic wastewater treatment. Explain with an example. The difference in the steps followed for the treatment and the methodologies used may be highlighted.	03

- (b) Discuss the preliminary and primary method of industrial wastewater treatment briefly 04
- (c) How does one decide which method of treatment is to be given to a particular sample of industrial waste stream. Explain the selection on the basis of all the three treatment methods. 07
- Q.5** (a) Suggest possible methods for reduction of the pollution generated from the industries. 03
- (b) Explain the pollution generation in industry with the help of a short case study of any particular equipment or subsection of the process. 04
- (c) What is a CETP? Discuss its difference from an Individual treatment plant. Draw a neat sketch also of the same. 07
- OR**
- (a) Discuss end of pipe treatment methods for the treatment of the wastewater generated at the end of the manufacturing process in any industry. 03
- (b) What are the major sources of pollution in the small scale industries? Highlight them briefly. 04
- (c) Explain the concept of Zero Discharge Plant with a neat sketch of the same. Explain its necessity. 07
