

Enrollment No./Seat No.:

GUJARAT TECHNOLOGICAL UNIVERSITY
Bachelor of Engineering - SEMESTER - VII EXAMINATION - WINTER 2025

Subject Code: 3174021

Date: 20-11-2025

Subject Name: Repair and Rehabilitation of Structures

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) What is condition assessment of civil structures? Write the objectives of condition assessment of structures.	03
(b) What do you understand by defect, distress, and deterioration?	04
(c) Describe the causes of damage in fresh and hardened state of concrete.	07
Q.2 (a) Differentiate between Quality Assurance (QA) and Quality Control (QC).	03
(b) What is pre-repair testing and why is it important?	04
(c) Write about the foundation rehabilitation methods.	07
OR	
(c) Compare and contrast the causes and effects of chloride attack and sulfate attack on concrete structures.	07
Q.3 (a) State the purpose of a preliminary inspection in condition assessment.	03
(b) Why is a condition survey important before repair or retrofitting?	04
(c) Explain the factors leading to corrosion of steel and its mechanism. How can corrosion be prevented?	07
OR	
(a) Why Non-Destructive Tests (NDT) are beneficial over the destructive test?	03
(b) Describe ultra sonic pulse velocity tests with all the types.	04
(c) Write a detailed note on chloride content and carbonation testing, explaining why they are critical for durability assessment.	07
Q.4 (a) Define Seismic retrofitting.	03
(b) Write in detail the important factors to be considered while selecting a repair method.	04
(c) Explain in detail the tests used to measure the corrosion potential of reinforcement bars.	07

OR

- (a) Which are the essential parameters required for selecting repair materials for concrete. 03
- (b) Define grouting materials and state one common application. 04
- (c) Describe the impact of environmental conditions and exposure categories on the selection of suitable materials for concrete repair. 07

- Q.5**
- (a) What is shotcrete? 03
 - (b) Why are expansion joints important during repair? 04
 - (c) Describe Epoxy as a repair material along with its advantages and precautionary measures. 07

OR

- (a) List the types of polymer concrete. 03
- (b) Which are the different foundation rehabilitation methods? Explain anyone from that. 04
- (c) What is grouting? Its advantages and types in detail. 07
