

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER-VII EXAMINATION – SUMMER 2025

Subject Code:3174021

Date:16-05-2025

Subject Name:Repair and Rehabilitation of Structures

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.
4. Simple and non-programmable scientific calculators are allowed.

		MARKS
Q.1	(a) State the need and objectives of condition assessment of structures?	03
	(b) Differentiate between repair, rehabilitation, and retrofitting?	04
	(c) Describe the causes of damage in fresh and hardened state of concrete.	07
Q.2	(a) How does health of concrete is affected by fire attack?	03
	(b) Describe alkali–aggregate reaction along with types.	04
	(c) Clarify various types of mineral admixtures used in concrete.	07
	OR	
	(c) Explain the factors leading to corrosion of steel and its mechanism. How can corrosion be prevented?	07
Q.3	(a) What are the deliverables from visual inspection of concrete?	03
	(b) Describe ultra sonic pulse velocity tests with all the types.	04
	(c) Illustrate half-cell potential meter test to estimate corrosion of reinforcement bars.	07
	OR	
Q.3	(a) Compare nondestructive test (NDT) and semi-destructive tests.	03
	(b) “The presence of chloride in the concrete is the contributory factor towards corrosion of reinforcement.”. How can we measure chloride content in concrete?	04
	(c) Describe in detail polymer modified mortars and concretes (PMM/PMC).	07
Q.4	(a) How concrete is impregnated using vacuum methods?	03
	(b) Write short note on ground penetrating radar pertaining to condition assessment of structures.	04
	(c) List and describe the essential parameters for a repair material?	07
	OR	
Q.4	(a) How silica fume concrete is beneficial?	03
	(b) Explain different types of surface overlays used in repair of the structure.	04

- (c) Describe epoxy as a repair material along with its advantages and precautionary measures. **07**
- Q.5** (a) State the purpose of seismic retrofitting. **03**
- (b) Write short note on water proofing repair. **04**
- (c) What do you understand by Ferrocement. Write its composition, applications, and advantages. **07**
- OR**
- Q.5** (a) How is jacketing useful in seismic retrofitting of a building? **03**
- (b) Describe various types of chemical attacks on concrete. **04**
- (c) Explain grouting, its advantages and types in detail. **07**
