

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-VII (NEW) EXAMINATION – SUMMER 2024****Subject Code: 3174021****Date: 22-05-2024****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 purpose of repair and maintenance of building.	03
	(b) Differentiate between repair, rehabilitation, and retrofitting?	04
	(c) Describe classes of damage and repair classification in details.	07
Q.2	(a) How does health of concrete is affected by freezing and thawing?	03
	(b) Describe alkali–aggregate reaction along with types.	04
	(c) Explain pull out test with neat sketch.	07
	OR	
	(c) “Corrosion is the gradual deterioration of materials by chemical or electrochemical reaction with their environment”. Explain the factors leading to corrosion of steel and its mechanism. How can corrosion be prevented?	07
Q.3	(a) What are the advantages of visual inspection of concrete?	03
	(b) How can soundness of concrete be measured? Explain in detail.	04
	(c) Elaborate the tests used to measure corrosion potential of reinforcement bars.	07
	OR	
Q.3	(a) Discuss advantages of nondestructive test (NDT) over destructive tests.	03
	(b) “Carbonation of concrete in cover results in loss of protection to the steel against corrosion”. How can we measure carbonation in concrete?	04
	(c) Describe in detail polymer modified mortars and concretes (PMM/PMC).	07
Q.4	(a) Describe performance requirements of repair systems.	03
	(b) Write short note on visual inspection to assess fire damaged structures.	04
	(c) List and describe the essential parameters for a repair material?	07
	OR	
Q.4	(a) What is durability and factors affecting it?	03
	(b) Explain different types of surface coatings 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) Define Seismic retrofitting.	03
	(b) Write short note on fiber wrap technique.	04
	(c) What do you understand by Ferrocement. Write its composition, applications, and advantages.	07

OR

- Q.5**
- (a)** Why is Jacketing required? **03**
 - (b)** Describe wet and dry process of Shotcrete. **04**
 - (c)** Explain various advanced techniques used to enhance seismic resistance of structure. Explain base isolation in details. **07**
