

**GUJARAT TECHNOLOGICAL UNIVERSITY****BE- SEMESTER-VII EXAMINATION – WINTER 2025****Subject Code:3170616****Date:20-11-2025****Subject Name:Retrofitting 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.

		<b>MARKS</b>
<b>Q.1</b>	(a) What exactly is a condition evaluation? List the objectives of the condition evaluation.	<b>03</b>
	(b) Explain Day to Day repair as per CPWD.	<b>04</b>
	(c) Enlist various construction errors which lead to the deterioration of concrete structure. Explain any one of them in detail.	<b>07</b>
<b>Q.2</b>	(a) Explain Routine and Periodic maintenance.	<b>03</b>
	(b) Explain repair to be carried out for leakage from terrace.	<b>04</b>
	(c) Explain with neat sketches the different types of cracking observed in various RCC elements such as beams, slabs and columns.	<b>07</b>
	<b>OR</b>	
	(c) Write in short on weathering effect freezing and thawing on RCC structure.	<b>07</b>
<b>Q.3</b>	(a) Write short note about vacuum concrete.	<b>03</b>
	(b) Write a short note on the fiber wrap method.	<b>04</b>
	(c) Explain the durability of concrete in detail.	<b>07</b>
	<b>OR</b>	
<b>Q.3</b>	(a) Explain on polymer impregnated concrete (PIC).	<b>03</b>
	(b) Enlist classifications of repair materials	<b>04</b>
	(c) Differentiate: (i) Repair and Retrofitting (ii) Active crack and Passive crack (iii) Drying shrinkage and Plastic shrinkage	<b>07</b>
<b>Q.4</b>	(a) Write a short note on procedure of Guniting.	<b>03</b>
	(b) Explain the procedure to ensure Quality control in Concrete construction.	<b>04</b>
	(c) Enlist types of shoring and explain raking shore with sketch.	<b>07</b>
	<b>OR</b>	
<b>Q.4</b>	(a) Explain injection grouting for RCC buildings.	<b>03</b>
	(b) Differentiate: (i) Porosity and Permeability (ii) Destructive testing and Non-destructive testing	<b>04</b>
	(c) List down the different Non-destructive testing methods and explain the working principle of any one of the NDT test method	<b>07</b>
<b>Q.5</b>	(a) Enlist out various physical and chemical deteriorations	<b>03</b>
	(b) Write a short note on fiber reinforced concrete.	<b>04</b>
	(c) Explain the importance of a concrete cover in an RCC structure. Provide IS:456 guidelines for nominal cover.	<b>07</b>

**OR**

**Q.5** (a) Enlist causes of distress in reinforced concrete structures. **03**  
(b) Write various thermal properties of concrete and explain coefficient of thermal expansion. **04**  
(c) Elaborate Alkali-aggregate reaction in detail. **07**

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