

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER-VII EXAMINATION – SUMMER 2025

Subject Code:3170616

Date:16-05-2025

Subject Name:Retrofitting 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) Enlist causes of distress in reinforced concrete structures.	03
	(b) Distinguish between Rehabilitation and Retrofitting with examples.	04
	(c) Attempt Following:	07
	(i) Main reason of crack in concrete during fresh stage of concrete is _____. (Plastic shrinkage, Drying shrinkage)	
	(ii) The value of Ultrasonic pulse velocity should be _____ km/s for concrete to be of Excellent Quality. (Below 3.0, between 3.0 to 3.5, above 4.5)	
	(iii) The sulphate attack can be controlled by use of _____. (Pozzollan, Air entrainment, high alumina).	
	(iv) In R.C.C. alkalinity of concrete should be maintained above _____ to prevent corrosion. (10, 11.5, 12)	
	(v) Fibers generally reduce _____ creep. (Compressive, Shear, Shrinkage)	
	(vi) The freezing water in pores of concrete expands about ____ % in volume as it is converted to ice) .5,9,15(
	(vii) The most common symptom of distress in concrete is ____ of Concrete.)Spalling, Scalling, Surface crazing)	
Q.2	(a) Write short note on : ‘Crack sealing materials’.	03
	(b) Explain the importance of cover in RCC structures.	04
	(c) What are the main objectives of condition assessment of structures? Explain various stages of condition survey in detail.	07
	OR	
	(c) What do you understand by durability of concrete? Enlist the factors affecting durability.	07
Q.3	(a) Write short note on: ‘core sampling and testing’.	03
	(b) Write short Note on: ‘Sulphur Infiltrated concrete’.	04
	(c) What is the importance of field and laboratory testing for damage assessment of structure? List out various field and laboratory tests.	07
	OR	
Q.3	(a) List various chemical tests performed in condition assessment survey.	03
	(b) Write short note on: ‘Polymer concrete’.	04
	(c) What do you understand by corrosion? Explain mechanism by which steel corrodes in concrete.	07
Q.4	(a) Explain crack repair by Routing and Sealing.	03
	(b) Explain the methodology to repair an earthquake deficient masonry structure.	04

- (c) Explain various points to be considered before arriving at the repair strategy. **07**
- OR**
- Q.4** (a) Write a short note on : ‘fiber wrap method’. **03**
- (b) Discuss Guniting technique and its applications in repairing and rehabilitation. **04**
- (c) Discuss Underpinning for foundation rehabilitation in detail. **07**
- Q.5** (a) Explain importance of building maintenance. List the activities covered in building maintenance. **03**
- (b) Explain crack repair by Grouting. **04**
- (c) What is jacketing? Explain different types of jacketing. **07**
- OR**
- Q.5** (a) Explain various types of defects in building. **03**
- (b) Explain the structural defects in masonry building. How can it be prevented? **04**
- (c) Discuss various corrosion mitigation techniques. **07**
