

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-VII (NEW) EXAMINATION – WINTER 2021****Subject Code:3170616****Date:15/12/2021****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.

		MARKS
Q.1	(a) What is a condition assessment? Give main objectives of condition assessment.	03
	(b) Explain need of concrete cover in RCC structure. Give IS:456-2000 recommendations for nominal cover.	04
	(c) Explain various types of maintenance.	07
Q.2	(a) Enlist causes of distress in reinforced concrete structures.	03
	(b) Explain injection grouting for RCC buildings.	04
	(c) Explain weathering effect freezing and thawing on RCC structure.	07
	OR	
	(c) List out various construction errors which leads to the deterioration of concrete structure.	07
Q.3	(a) List out various physical and chemical deteriorations.	03
	(b) Give various classifications of repair materials.	04
	(c) Explain RCC jacking and also explain column jacking with neat sketch.	07
	OR	
Q.3	(a) Enlist various types of Non- Destructive Tests.	03
	(b) Explain effect of Acid attack on concrete element.	04
	(c) Write short note on Fiber Reinforced Concrete.	07
Q.4	(a) Write short note on polymer impregnated concrete.	03
	(b) Write short note on vacuum concrete.	04
	(c) Explain the corrosion of reinforcement in RCC structure.	07
	OR	
Q.4	(a) Define (i) Repair (ii) Restoration (iii) Retrofitting	03
	(b) Write short note on Guniting.	04
	(c) Explain the durability of concrete in detail.	07
Q.5	(a) Enlist various thermal properties of concrete and explain coefficient of thermal expansion.	03
	(b) How to carry out repairs of leakage from terrace?	04
	(c) Give various types of shoring and explain raking shore with sketch.	07
	OR	
Q.5	(a) Explain Day to Day repair.	03
	(b) Write short note on Fibre Wrap Technique.	04
	(c) Enlist various crack repair techniques and explain crack repair by stitching.	07

Seat No.: _____

Enrolment No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER-VII (NEW) EXAMINATION – SUMMER 2022

Subject Code:3170616

Date:08/06/2022

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) Define the following terms: (i) Durability of concrete (ii) Deterioration (iii) Retrofitting	03
	(b) Give a broad classification of various types of deterioration as observed in Reinforced concrete structures	04
	(c) Enlist various Construction and design errors that lead to fatal failure of structures.	07
Q.2	(a) Justify the need of performing the condition evaluation/structural appraisal of the structure during its life time.	03
	(b) Differentiate between the following terms: (Any two) (i) Repair and Retrofitting (ii) Active crack and Passive crack (iii) Drying shrinkage and Plastic shrinkage (iv) Destructive testing and Non-destructive testing (v) Porosity and Permeability	04
	(c) Describe with neat sketches the different types of cracking observed in various RCC elements such as beams, slabs and columns.	07
	OR	
	(c) Enlist and explain the different clauses in accordance with IS 456 to ensure the durability of the construction.	07
Q.3	(a) List down the different Non-destructive testing methods and explain the working principle of any one of the NDT test method.	03
	(b) List down the various factors to be considered while selecting repair method and steps to be followed to carry out an effective repair.	04
	(c) Define Condition Assessment. Mention the various objectives of the condition assessment of structures.	07
	OR	
Q.3	(a) Enlist various types of chemical and physical deterioration seen in concrete structures.	03
	(b) Write a short note on procedure of Guniting.	04
	(c) Enlist various strengthening methods for beams and slabs. Explain one strengthening method in detail for both beam and slab.	07
Q.4	(a) List down various parameters which you will keep in mind while assessing the cracks in RCC members.	03
	(b) Write a short note on Transport Mechanism of fluids into the concrete.	04
	(c) Define Alkali-aggregate reaction and explain it in detail.	07

OR

- Q.4** (a) Mention various signs of distress seen in deteriorated concrete structure. **03**
(b) How would you ensure Quality control in Concrete construction. **04**
(c) Explain the Mechanism of Corrosion in concrete structures. **07**

- Q.5** (a) What steps will you follow to correct a deflected RCC slab. **03**
(b) List down the various techniques to strengthen the Foundation. **04**
(c) Write a short-note on Under-water repairs. **07**

OR

- Q.5** (a) Explain Routine and Periodic maintenance. **03**
(b) Explain the procedure of Stitching or Resin injection for repair of cracks. **04**
(c) Mention the major points of difference between a New construction work and repair/strengthening work. **07**
