Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

M. E. - SEMESTER – II • EXAMINATION – WINTER • 2014

Subject code: 1722006 **Date: 04-12-2014**

Subject Name: Rehabilitation of Structures

Time: 02:30 pm - 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.

Q.1 **(a)** Define following terms with respect to concrete. **07**

1. Cavitation
2. Carbonation
3. Abrasion
4. Erosion
5. Alkali- silica reaction
6. Freezing and thawing of concrete
7. Creep

(b) What is Non-destructive testing of concrete? Enlist various Non-destructive testing methods used for concrete and Explain any one test in detail. **07**

Q.2 **(a)** Which are the tests to determine the Fresh concrete? Explain the Compacting Factor test in detail. **07**

(b) What is Effect of Freezing and thawing on concrete? **07**

OR

(b) What is carbonation in concrete? Discuss the reasons and factors affecting Rate of carbonation. **07**

Q.3 **(a)** Explain the terms in detail: Repair, Rehabilitation and Retrofitting of concrete structure. **07**

(b) Which are the major reasons for deterioration of Steel structure? Prepare a checklist for steel structure assessment for defects and deterioration. **07**

OR

Q.3 **(a)** A RCC building is deteriorated due to the earthquake excitation. With neat sketches, explain methods for repairing the Beam, column and Wall masonry **07**

(b) Discuss the failure of structure due to corrosion. Explain test method for electrical indication of concrete ability to resist chloride ion penetration. **07**

Q.4 **(a)** Explain the strengthening techniques for an RCC column & beam in building severely damaged during the earthquake. Illustrate the method completely as per is code. **07**

(b) Which are the Indian code provisions and guidelines for building planning to make them earthquake resistant? **07**

Draw the sketch for following as per the code.

1. Bands in masonry buildings
2. Beam-column Joint.

OR

Q.4 **(a)** Explain role of quality control in construction as preventive measure of building maintenance. **07**

(b) Explain the methods of Pre-packed and Vacuum concrete with neat sketches for repairing of a concrete member. **07**

Q.5	**(a)**	Explain push-over analysis in detail. What are the aim and objective of this method?	**07**
	(b)	Explain all important causes of defects and deterioration of a building. Also explain the terms spalling and efflorescence of concrete.	**07**

OR

Q.5	**(a)**	What is Effect of Weathering and Efflorescence on concrete? Discuss the reasons and factors affecting Weathering and Efflorescence.	**07**
	(b)	Enlist the benefits of push-over analysis method of structural analysis. Why it is carried out? When and how the results of push-over analysis could be useful?	**07**

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