

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**
