

GUJARAT TECHNOLOGICAL UNIVERSITY**M. E. - SEMESTER – II • EXAMINATION – WINTER • 2013****Subject code: 1721502****Date: 27-12-2013****Subject Name: Behavior of Reinforced Concrete****Time: 10.30 am – 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.

- Q.1** (a) Briefly describe the limit state design philosophy applicable to Reinforced Concrete. **07**
- (b) Discuss the various idealized stress strain models for concrete proposed by researchers. **07**
- Q.2** (a) Explain the response of Reinforced Concrete elements under the effect of uniaxial and biaxial bending stresses. **07**
- (b) State the basic assumptions and its implications on design of Reinforced Concrete elements under axial force. **07**
- OR**
- (b) State the basic assumptions and its implications on design of Reinforced Concrete elements under flexure. **07**
- Q.3** (a) Discuss the effect of confinement on compressive behavior of concrete giving example of Reinforced Concrete Column. **07**
- (b) Explain moment curvature relationship of Reinforced Concrete element. **07**
- OR**
- Q.3** (a) Explain shear resisting mechanism of Reinforced Concrete element without any shear reinforcement. **07**
- (b) Describe the concept of nominal flexural strength of a beam and give codal provisions to prevent brittle failure of beam in flexure. **07**
- Q.4** (a) Explain truss model for shear in detail. **07**
- (b) Describe the resistance mechanism of Reinforced Concrete element under torsion. **07**
- OR**
- Q.4** (a) Discuss the governing factors which affect the long and short term deflections of flexural members. **07**
- (b) Why the design bond strength of concrete is increased for compression bars and deformed bars? Which are the governing factors that influence the stress transfer mechanism of bond? **07**
- Q.5** (a) Which are the various theories to analyze slab elements? Explain any one of them. **07**
- (b) Derive 'm' for the orthotropically reinforced rectangular slab simply supported on all edges and uniformly loaded. **07**
- OR**
- Q.5** Write a short note on (Attempt any four) **14**
- (a) Effective width of flange of a T-beam.
- (b) Effect of slenderness on behavior of Reinforced Concrete column.
- (c) Interface shear transfer.
- (d) Effective section in torsion.
- (e) Minimum eccentricity in column.
- (f) Beam with very small amount of steel.
