Seat No.: _____ Enrolment No._____

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.	

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