

GUJARAT TECHNOLOGICAL UNIVERSITY**M.E Sem-II Examination July 2010****Subject code: 721502****Subject: Behavior of Reinforced Concrete****Date: 06 /07 /2010****Time: 11.00am – 1.30pm****Total Marks: 60****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.
4. Use of IS 456 is permitted.

- Q.1 (a)** Write the factors affecting uniaxial compressive strength of concrete. **06**
(b) How does confinement change the compressive behavior of concrete? Describe factors affecting the same. **06**

- Q.2 (a)** Discuss the shear resisting mechanism of a reinforced concrete section without any shear reinforcement. **06**
(b) Explain types of failure in reinforced concrete element under pure flexure. What governs their failure pattern and how? **06**

OR

- (b)** Explain the following (i) Need of minimum flexural reinforcement (ii) Failure mechanism of doubly reinforced section **06**

- Q.3 (a)** Differentiate between behavior of laterally tied columns and spirally tied column under uniaxial load. **03**
(b) Explain method to derive interaction between axial compression and uniaxial bending moment, acting on a given reinforced concrete column. **09**

OR

- Q.3 (a)** Methodology to draw yield line pattern of slab under various support conditions **04**
(b) Determine design parameters of a triangular slab simply supported on all three edges and loaded by uniformly distributed load using yield line theory. **08**

- Q.4 (a)** Write basic assumptions made to derive general theory for flexural strength of reinforced concrete section. What are their implications on flexural behavior of reinforced concrete element? **04**
(b) Explain various parameters which affect shear behavior of a reinforced concrete section. **08**

OR

- Q.4 (a)** What do you understand by shear flow? Explain direction of shear flow under pure torsion and its resisting mechanism. **04**
(b) Describe truss model for shear in detail. **08**

- Q.5 (a)** Describe factors affecting long and short term deflection of beam. **06**
(b) Calculate short term deflections of a one way simply supported slab having 3.2m clear span and carrying a live load 2kN/m^2 . The slab is of 125mm thickness, cast in M20 grade concrete and has 8mm diameter HYSD (Fe 415) main steel bars at 200c/c at bottom. **06**

OR

- Q.5** Write a short note on
(a) Effective width of flange of a T-beam **04**
(b) Development length and bond stress in a reinforced concrete beam. **04**
(c) Effect of slenderness on behavior of reinforced concrete column **04**
