

Seat No.: _____

Enrolment No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY
B.ARCH - SEMESTER- III • EXAMINATION – WINTER • 2014

Subject Code: 1035003

Date: 26-12-2014

Subject Name: Structure - III

Time: 2:30 PM to 4:30 PM

Total Marks: 50

Instructions:

1. Attempt all questions.
2. Make suitable sketches wherever necessary.
3. Figures to the right indicate full marks.

- Q.1** (a) Differentiate between (i) Column and Strut (ii) Long Column and Short column. **06**
- (b) Write the expression of “Euler Crippling Load” for various end conditions of a column. **06**
- (c) A square column of 400 mm side carries a compressive Load of 400 kN at an eccentricity of 100mm on x-x axis. Find maximum stress and minimum stress at the base of the column. **06**
- Q.2** (a) A circular column 450mm in diameter carries a load of 600kN at an eccentricity of 100mm. Calculate maximum and minimum stresses for the column. **06**
- OR**
- (a) Find the radius of gyration for a hollow circular section having external diameter of 100 mm and thickness of 10 mm. **06**
- (b) An unknown weight falls through 40mm on a collar rigidly attached to the lower end of a vertical bar, 6m long and 20mm in diameter. If the max. instantaneous extension is known to be 3mm, what is the corresponding stress and the value of unknown weight? Take $E = 210 \text{ kN/mm}^2$. **10**
- Q.3** (a) A fixed beam of 6 m span carries a central point load of 80 kN. Find out fixing moments and draw S.F and B.M diagram of the beam. **06**
- (b) A fixed beam of 4 m span carries UDL of 60 kN/m over its entire span. Draw S.F and B.M diagrams for the beam. Also find point of Contraflexure. **10**
- OR**
- (b) A continuous beam ABC is simply supported at A, B and C such that $AB = BC = 4\text{m}$. The span AB carries a UDL of 20 kN/m and span BC carries a central point load of 50 kN. Draw S.F and B.M diagrams for the beam. **10**
