Seat No.:

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

Subject Code: 1035003 Subject Name: Structure - III Time: 2:30 PM to 4:30 PM Instructions:

Date: 26-12-2014

Total Marks: 50

- 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 06 column.
 - (c) A square column of 400 mm side carries a compressive Load of 400 kN at an **06** eccentricity of 100mm on x-x axis. Find maximum stress and minimum stress at the base of the column.
- Q.2 (a) A circular column 450mm in diameter carries a load of 600kN at an eccentricity of 06 100mm. Calculate maximum and minimum stresses for the column.

OR

- (a) Find the radius of gyration for a hollow circular section having external diameter of **06** 100 mm and thickness of 10 mm.
- (b) An unknown weight falls through 40mm on a collar rigidly attached to the lower 10 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 $E = 210 \text{ kN/mm}^2$.
- Q.3 (a) A fixed beam of 6 m span carries a central point load of 80 kN. Find out fixing 06 moments and draw S.F and B.M diagram of the beam.
 - (b) A fixed beam of 4 m span carries UDL of 60 kN/m over its entire span. Draw S.F **10** and B.M diagrams for the beam. Also find point of Contraflexure.

OR

(b) A continuous beam ABC is simply supported at A, B and C such that AB = BC = 10 4m. 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.
