Enrolment No._____

Seat No.: _____

GUJARAT TECHNOLOGICAL UNIVERSITY

B. ARCH - SEMESTER– III . EXAMINATION– WINTER- 2017

Subject Code: 1035003 **Date: 18-11-2017**

Subject Name: Structure-III

Time: 10:30Am to 12:30 Pm **Total Marks: 50**

Instructions:

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

Q.1 **(a)** Define Axial Load and Eccentric Load also state equation of Direct and Bending Stress. **04**

(b) Differentiate between (i) Column and Strut (ii) Long Column and Short column. **06**

Q.2 **(a)** Explain buckling of a column and write down the "Euler Crippling Load" formula for different end conditions of the long column. **06**

(b) Calculate radius of gyration of a circular section of 75 mm diameter. **04**

OR

(b) Write the assumptions for Euler's Column theory. **04**

Q.3 A square column of 600 mm side carries a compressive Load of 500 kN at an eccentricity of 120 mm on y-y axis. Find maximum stress and minimum stress at the base of the column. Draw the Stress Diagram. **10**

OR

Q.3 Determine the deflection at the free end B of a 5 m long cantilever beam AB, if end B carries a point load of 120 kN. Take beam of 300 x 575 mm and E = 2 X 10^5N/ mm^2. **10**

Q.4 A steel rod 25 mm in diameter is 5 m long. Find the work done when an axial pull of 100 kN has applied suddenly to it. Calculate the maximum instantaneous stress and elongation produced. Take E = 2 x 10^5 **10**

OR

Q.4 A two span continuous beam ABC is simply supported at A, B and C such that AB= 5m and BC = 5m. The span AB carries a central point load of 160 kN and span BC carries a u.d.l. of 20 kN/m. Draw S.F and B.M diagrams for the beam. **10**

Q.5 A fixed beam of 8 m span carries U.D.L of 80 kN/m over its entire span. In addition, eccentric point load of 10 kn at 3 m from extreme left support of the beam. Draw S.F and B.M diagrams for the beam. Also, find point of Contra flexure. **10**

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