

**GUJARAT TECHNOLOGICAL UNIVERSITY**  
**B.ARCH - SEMESTER- III • EXAMINATION – SUMMER 2017**

**Subject Code: 1035003**  
**Subject Name: Structure-III**  
**Time: 02:30PM to 04:30PM**

**Date: 03/05/2017**  
**Total Marks: 50**

**Instructions:**

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

- Q.1** (a) Advantages and disadvantages of indeterminate Structures **04**  
 (b) A fixed beam of 6 m span carries U.D.L of 80 kN/m over its entire span. Draw S.F and B.M diagrams for the beam. Also find point of Contra flexure. **10**
- Q.2** (a) Define Axial load and Eccentric load **06**  
 (b) 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. **10**
- OR**
- (b) A two span continuous beam ABC is simply supported at A, B and C such that AB= 4m and BC = 6m. The span AB carries a central point load of 140 kN and span BC carries an u.d.l. of 30 kN/m. Draw S.F and B.M diagrams for the beam **10**
- Q.3** A steel rod 5m long and of 40mm diameter is used as a column, with an end fixed and other free. Determine the crippling load by Euler's Formula. Take E as 200. **08**
- OR**
- Q.3** (a) Define Slenderness ratio and explain the failures of Long column and short column **04**  
 (b) Define Rankine's formula for Columns and explain Euler's Crippling Load **04**
- Q.4** i) Define Radius of gyration ii) Define Crippling Load, Buckling Load, Critical Load **06**
- OR**
- Q.4** A Hollow Circular section is having internal diameter 60mm and 10mm thickness. Calculate radius of gyration **06**
- Q.5** Explain Euler's Column Theory and assumption for the same. **06**
- OR**
- Q.5** Discuss 'Equivalent Length of a Column' for different end conditions, their relations and Crippling Load **06**

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