

Total No. of Pages:02

Roll No.....

VII SEMESTER

**B.Tech.**

**SUPPLEMENTARY EXAMINATION**

**FEB-2019**

**CE405 Design of Steel Structures**

**Time: 3:00 Hours**

**Max. Marks : 40**

**Note:** Answer any 5 question  
Use of IS 800:2007 is Permitted  
Assume suitable missing data, if any.

- Q.1 a. Name the different modes of failure of a riveted joint?  
b. What are the factors that affect strength of Tension member?  
c. What is shear lag?  
d. When the slenderness ratio of compression member increases, the permissible stress decreases. why? (2x4)
- Q.2 Design a built up laced column with four angled to support an axial load of 750 kN. The column is 10m long and both ends are held in position and restrained against rotations. Assume Fe 410 grade steel. (8)
- Q.3 Calculate the strength of a 20 mm dia bolt of grade 4.6 for the following cases. The main plates to be jointed are 12mm thick
- a. Lap joint
  - b. Single cover butt joint, the cover plate being 10 mm thick
  - c. Double cover butt joint each of the cover plate being 8 mm thick (8)
- Q.4 A simply supported steel joist with a 4.0m effective span carries a udl of 40kN/m over its span inclusive of self weight. The beam is laterally unsupported. Design a suitable section. Take  $f_y=250\text{N/mm}^2$ . (8)

P.T.O

- Q.5 Design a single angle section for a tension member of a roof truss to carry a factored tensile force of 200 kN. The member is subjected to the possible reversed of stress due to the action of wind. The length of the member is 3m. Use 20 mm shop bolts of grade 4.6 for the connection.
- Q.6 Design top plate, bottom plate, stays, upper tier beam of elevated water tank to store  $10^5$  litres of water?

**END**