

00594

**B.Tech. Civil (Construction Management) /  
B.Tech. Civil (Water Resources Engineering)**

**Term-End Examination**

**December, 2010**

**ET-508(B) : STRUCTURAL DESIGN-II**

*Time : 3 hours*

*Maximum Marks : 70*

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*Note : Attempt any four questions. Use of steel table, IS 800-code and calculator is allowed. Any missing data may be suitably assumed.*

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1. A 16mm thick plate is joined by double cover butt joint using a 10mm thick cover plate. The steel used is having tensile strength of 150MPa. Determine the strength and efficiency of the joint per pitch of 90mm if 20mm diameter power driven shop rivets are used. 17½
  
2. Determine the tensile strength of a  $100 \times 75 \times 10$ mm angle connected to the gusset plate by 22mm diameter power - driven rivets connected to longer leg. 17½
  
3. (a) Write the assumptions taken while designing a riveted connection. 7  
(b) Explain the procedure of designing a laced built up column of steel. 10½

4. A column consisting of ISHB 400@ 822 N/m carries an axial load of 400kN. Design the column splices when the ends of column are cut by ordinary method. 17½
  5. A column of ISMB 400 is subjected to an axial force of 750 kN. Design the base plate. Assume a pedestal of M15 concrete mix for design. 17½
  6. Design an angle purlin for a trussed roof from the following data : 17½
    - Span of roof truss = 12m
    - Spacing of roof trusses = 5m
    - Spacing of purlins along the slope of the roof = 1.2m
    - Slope of roof truss = 1 vertical : 2 Horizontal
    - Wind load on roof surface normal to roof = 1.04kN/m<sup>2</sup>
    - Vertical load from roof sheeting = 0.20kN/m<sup>2</sup>.
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