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Total number of printed pages – 2

B. Tech  
PECI 5301 (New)

**Sixth Semester (Back) Examination – 2013**

**DESIGN OF STEEL STRUCTURES**

**BRANCH : CIVIL**

**QUESTION CODE : B 243**

**Full Marks – 70**

**Time : 3 Hours**

*Answer Question No. 1 which is compulsory and any **five** from the rest.*

*The figures in the right-hand margin indicate marks.*

*Use of relevant IS codes and steel tables are permitted.*

*Assume suitable data wherever required.*

1. Answer the following questions very shortly : 2×10
- (a) High carbon steel
  - (b) Plastic section
  - (c) Ductility
  - (d) Basic wind speed
  - (e) Gusset plate
  - (f) Lap joint
  - (g) Effective length
  - (h) Moment resisting frame
  - (i) Fillet weld
  - (j) Rolled section
2. A diagonal member of a roof truss 3 m long carries an axial tension load of 200 KN. Design the member and the end connection. 10



**P.T.O.**

3. An ISHB 400 of 5.0 m long is used as a column fixed at the base and hinged at the top. Calculate its load carrying capacity. 10
4. Design a single angle strut carrying a factored compressive load of 65 KN with length between centre to centre of intersection as 3.0 m. Design the end connection. 10
5. Design a simply supported beam of span 6.0 m to carry UDL of 3 KN/m including self weight. Floor construction prevents the beam from lateral buckling. The beam rests over stiff bearings of 250 mm at the ends. 10
6. A compound beam is to carry a uniformly distributed load of 40 KN/m and imposed load of 60 KN/m. The beam is simply supported of 8 m span resting over 250 mm bearing at the ends. Design the beam assuming the compression flange to be laterally supported. 10
7. Design a lap joint to join two plates of size 200 × 10 mm of Fe410 to mobilize full tensile strength using shop fillet weld. 10
8. A welded plate girder is fabricated from two 600 × 30 mm flange plates and 1300 × 12 mm web plate of Fe410 grade steel. What is the moment capacity of the girder. 10

