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Total number of printed pages – 2

B. Tech
PECI 5301

Sixth Semester Regular Examination – 2014

DESIGN OF STEEL STRUCTURE

BRANCH : CIVIL

QUESTION CODE : F 261

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.

1. Explain the followings :

2×10

- High carbon steel
- Plastic section
- Ductility
- Basic wind speed
- Gusset plate
- Lap joint
- Effective length
- Moment resisting frame
- Fillet weld
- 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 Fe 410 to mobilize full tensile strength using shop fillet weld. 10
8. A welded plate girder is fabricated from two 600 x 30 mm flange plates and 1300 × 12 mm web plate of Fe 410 grade steel. What is the moment capacity of the girder ? 10