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Total number of printed pages – 2

B. Tech
PECI 5301

Sixth Semester (Special/Back) Examination – 2013

DESIGN OF STEEL STRUCTURE

BRANCH : CIVIL

QUESTION CODE : E 333

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 :

2 × 10

- Rolled steel section
- Classification of sections
- Design strength and ultimate strength
- Assumptions of welded connection
- Double lacing system
- Web buckling and web crippling
- Fillet weld
- Bracket connection
- Vertical stiffeners
- Gusseted base.



2. Design a tubular section to carry a tensile load of 160 kN using fillet welded end connection. Show the end connection by drawing a figure.

10

P.T.O.

3. Design a double cover plate butt joint to carry a working load of 250 kN to connect two equal size flats consisting of 125 mm width and 20 mm thickness using M16 high strength bolts of property class 10.9 if slip is not permitted. 10
4. Design a single laced column with effective length of 6.0 m with two channels back to back to carry a factored load of 1850 KN. 10
5. Design a simply supported and laterally supported beam having effective span of 5 m carrying a uniformly distributed dead load of 80 kN/m including self weight. Bearings of 250 mm is provided at each support. 10
6. Calculate the flexural strength of a plate girder which consists of a 6 × 1000 mm web and 30 × 450 mm flanges. Use Fe410 steel. The compression flange is supported laterally. 10
7. Design a lap joint to join two plates of size 150 × 10 mm of Fe410 to mobilize full tensile strength using shop fillet weld. 10
8. Design the diagonal member of a roof truss of 4 m long carrying an axial tensile load of 250 KN with end connection. Draw a sketch for the end connection. 10

