PVP 14

Code: CE6T2

III B.Tech-II Semester–Regular/Supplementary Examinations–March 2019

DESIGN AND DRAWING OF STEEL STRUCTURES
(CIVIL ENGINEERING)

Use of IS 800-2007 & IS: 875- Part III and Steel Tables are allowed

Duration: 3 hours Max. Marks: 70

PART – A

Answer any ***ONE*** question. 1 x 28 = 28 M

1. Design a welded plate girder, 24m in effective span and simply supported at the two ends. It carries a uniformly distributed load of 125 kN/m and two concentrated loads of 250 kN each, acting at 6m from either support. Draw to a suitable scale
   a) Cross section
   b) Longitudinal elevation of the plate girder with details.

(OR)

2. Design a compression member of two channels Toe-to-Toe. The length of the compression number is 10m and carries a load of 1500 kN. The width over the backs of channels is 400mm. The channels are connected by battens.
   a) Sectional elevation of the column.
   b) Cross section of the column

PART – B

Answer any *THREE* questions. All questions carry equal marks.

3 x 14 = 42 M

3. a) What are the advantages and disadvantages of the welded connections? 7 M

   b) Explain the various types of butt welds with neat sketches. 7 M

4. Design a tension member subjected to a pull of 350 kN using unequal angles, placed back-to-back with their longer legs connected on the same side of the gusset plate. Find the strength of the member designed as above, when it is connected on either side of the gusset plate. 14 M

5. Design a simply supported plated rolled steel beam section to carry a uniformly distributed load of 40 kN/m inclusive of self weight. Effective span of the beam is 5 m. The depth of the beam is not to exceed 450 mm. The compression flange of the beam is laterally supported. 14 M

6. A column section ISHB 350 @ 661.2 N/m carries a factored axial compression load of 1800 kN. And factored bending moment of 90 KN-m .Design the base plate and its connections. The base rests on M 20 concrete pedestal. 14 M

7. Design I section purlin with and without sag bars for a trussed roof from the following data 14 M

Span of roof = 10 m;
Spacing of purlins along slope of truss = 2.5 m;
Spacing of Truss = 4 m;
Slope of roof truss = 1 vertical, 2 horizontal
Wind load on roof surface normal to roof = 1100 N/m^2
Vertical load from roof sheets, etc = 150 N/m^2