Reg. No. : | | | | | | | | | | | | |

Question Paper Code : 52256

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2017

Sixth Semester

Civil Engineering

CE 2352 – DESIGN OF STEEL STRUCTURES

(Regulations 2008)

(Common to PTCE 2352 – Design of Steel Structures for BE (Part-Time) Fourth Semester – Civil Engineering – Regulations 2009)

Time : Three Hours | Maximum : 100 Marks

(IS : 800 – 2007, Steel Tables are permitted)

Answer ALL questions.

PART – A **(10×2=20 Marks)**

1. List the advantages of welded connections.
2. Define efficiency of joints.
3. What is effective area ?
4. Where do you use lug angles ?
5. Define buckling.
6. List the functions of column bases.
7. How is flange plate curtailment done in plate girder ?
8. What is bearing stiffeners ?
9. Write the types of trusses provided for different spans.
10. What is a gantry girder ?

PART – B (5×16=80 Marks)

11. a) Two plates 10 mm and 14 mm thick are to be joined by a double cover butt joint. Assuming cover plates thickness, design the joint to transmit factored load of 350 kN. Assuming Fe 410 plate and 16 mm diameter grade 4.6 bolts are used.

(OR)

b) Design a lap joint between the two plates each of width 120 mm, if the thickness of one plate is 16 mm and the other is 12 mm, the joint has to transfer a design load of 160 kN. The plates are Fe410 grade. Use bearing type bolts.

12. a) Design a tension member to carry a factored force of 340 kN. Use 20 mm diameter black bolts and a gusset plate of 8 mm thick.

(OR)

b) Design the end connection for angle 100 × 100 × 10 mm using lug angle for its full design strength. Assume yield stress of steel as 250 MPa.

13. a) Determine the design axial load carrying capacity of the column ISHB 300 @ 575 N/m. If the length of the column is 3m and it's both ends are pinned.

(OR)

b) Design a single angle strut connected to the gusset plate to carry 180 kN factored load. The length of the strut between centre to centre intersections is 3m.

14. a) Design a beam of 5 m effective span, carrying a uniform load of 20 kN/m, if the compression flange is laterally unsupported. Assume $f_y = 250$ N/mm^2.

(OR)

b) Design a simply supported beam section to carry a Uniformly Distributed load of 50 kN/m, inclusive of self-weight of the beam. The effective span of the beam is 9m. The depth of the beam should not be more than 500 mm. The compressive flange of the beam is laterally supported by floor construction.

15. a) Discuss the design procedure for wind pressure on roof.

(OR)

b) Explain the analysis and design procedure of gantry girder.