Roll No. ☐☐☐☐☐☐☐☐☐☐☐

B.E / B.Tech (Part Time) DEGREE END SEMESTER EXAMINATIONS, NOV / DEC 2013

CIVIL ENGINEERING

IV Semester

PTCE 372 / PTCE 332 /PTCE 9302 DESIGN OF STEEL STRUCTURES
(Regulation 2002/2005/2009)

Time: 3 Hours   Answer ALL Questions   Max. Marks 100
Use of IS 800,IS 883 and Steel Tables are permitted

PART-A (10 x 2 = 20 Marks)

1. Draw a neat sketch of ISMB 300 and mark its dimensions.
2. What are the advantage of riveted connection?.
3. Calculate the strength of 6mm fillet weld of 1mm length subjected to shear
4. Define Net Area.
5. Write the limiting slenderness ratio for a for compression member subjected to dead and live load.
6. Draw a neat sketch of a base plate connection detail.
7. What are various ways to provide lateral restraints for a beam?
8. How will you prevent the web buckling?
9. When will vertical stiffeners are provided in a plate girder?
10. What are the advantageous of using timber as a structural material?

Part – B (5 x 16 = 80 marks)

11. Design a rectangular timber column to be used for an inside locations to carry an axial load of 500 kN. The effective length of the column is 4.0m.

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

(OR)

b) Write the step-by-step procedure for designing an eccentricity loaded fillet welded joint if the load lie in the plane of weld.

13. a) An angle section ISA 65 x 65 x 6 mm is used as a tension member with its one leg connected by 12mm dia. rivets. Calculate its strength. What will be its strength if it is fillet welded?

(OR)

b) Design a tie member for a roof truss to carry a load of 50 kN. The length of the member is 3.0 m.

14. a) Design a built-up column composed of two channel sections placed back to back, carrying an axial load of 1500 kN. Effective length of Column is 4.5 m. Design the lacing. Take $f_y = 250$ N/mm^2

(OR)

b) Calculate the axial load capacity of a ISMB 500 column, if the effective length is 4m.

15. a) Design a laterally supported beam for an effective strength of 5m to carry an.udl of 50 kN/m for its entire span. Check for shear and deflection

(OR)

b) Design a mid span section of a welded plate girder, if the simply supported span is 20m and it carries a concentrated load of 50 kN at its mid span.