

B.E. / B.Tech (Full Time) DEGREE END SEMESTER EXAMINATIONS, APRIL/MAY 2011

CIVIL ENGINEERING BRANCH

FIFTH SEMESTER

CE 9302 – DESIGN OF STEEL STRUCTURES

(REGULATIONS 2008)

TIME: 3 hr

Max Mark: 100

42

- Instructions:
1. Assume any missing data suitably.
  2. Use of relevant BIS standards and Handbooks are permitted.

Answer ALL Questions.

PART – A (10 X 2 = 20 Marks)

1. Draw a neat sketch of ISMB 300 and mark the dimensions.
2. Draw a neat sketch of a Bracket plate connection
3. Calculate the strength of 6 m fillet weld subjected to shear.
4. Write the limiting slenderness ratio for a tension member.
5. Classify ISMB 400 using beam section classification
6. Draw a neat sketch of a Base Plate connection detail.
7. Calculate the compression capacity of an ISA65X65X6, if the effective length is 4 m.
8. How will you prevent the web buckling?
9. Draw a neat sketch of plate girder.
10. What are the advantageous of timber structures?

PART – B (5 X 16 = 80 Marks)

11. Design a square Timber SAL Column to be used for an outside location to carry an axial load of 200 kN. The length of the column is 5 m.

12 a) Write the step-by-step procedure for designing an eccentricity loaded Riveted joint if the load lie in the plane of weld.

(OR)

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

13. a) Design a tension member using plates to carry a factored load of 100 kN.

(OR)

b) Design a Double-angle section for a roof truss to carry a load of 500 kN. The length of the member between the centers of intersection is 2.50 m.

14 a) Design a column to carry a factored axial load of 500 kN & effective length of column is 3.00 m using channel sections. Take  $f_y = 510 \text{ N/mm}^2$ .

(OR)

b) Write the step-by-step procedure for designing a Batten plate for a built-up column.

15 a) Design a laterally supported beam for an effective strength of 6 m to carry a UDL of 100 kN/m for the entire span. Check for shear, deflection, web crippling and web buckling.

(OR)

b) Design a mid span section of a bolted plate girder for an effective span of 10 m to carry an UDL of 20 kN/m including its own weight, if the beam is laterally supported.