

Anna University – Regulation 2013

CE6603 DESIGN OF STEEL STRUCTURES

PART – A (2 Marks) – www.exammmain.com

1. Define pitch of a rivet.
2. What is the strength of a fillet weld?
3. Define reverting? Classify the structures based on shape and geometry.
4. Define tension splice.
5. List the various types of steel sections used as a tension members.
6. Define Block shear failure.
7. What is the purpose of providing bearing stiffeners?
8. What is web buckling?
9. Define slenderness ratio.
10. List the various components of a roof truss.
11. What are lug angles?
12. List out the different types of bolts. What are the loads to be considered for the design of gantry girder?
13. What are the merits and demerits of welded connection?
14. What is the purpose of a principal rafter in a truss?
15. Define web splice and where it is provided?
16. On what basis is live load considered in the design of roof truss?
17. What is the significance of column buckling curves?
18. What do you mean by curtailment of flanges?
19. What do you mean by curtailment of flanges?
20. What is meant by design load?
21. Write any two criteria for deflection of gantry girder as per IS.
22. Mention the types of failures in riveted joint.

23. What do you understand by prying action?

24. Write the steps in the design of a column slab base connection.

PART –B

1. Determine the strength and efficiency of the lap joint as shown in the diagram. The bolts are of 20 mm diameter and grade 4.6. The two plates to be jointed are 10 mm and 12 mm thick.

2. A tie member in a truss girder is 250 x 14 mm in size. It is welded to a 10 mm thick gusset plate by a fillet weld. The overlap of the member is 300 mm and the weld size is 6 mm. Determine the design strength of the joint if welding is done.

3. Design a tension splice to connect two plates of size 160 mm X 10 mm and 250 mm X 14 mm, for a design load of 300 kN. Also sketch the details of the bolted joints.

4. Design a built up column 9 m long to carry a factored load of 1100 kN. The column is restrained in position but not in direction at both the ends. Use battens and two channel sections back to back.

5. A column ISHB 350 carries a factored load of 1700 kN. Design a suitable bolted foundation block is made up of M20 grade concrete with bearing capacity of 5 N/sq.mm. The base rests on M15 grade concrete pedestal. Use 24 mm diameter bolts of grade 4.6 for connections.

6. Determine the design bending strength of ISLB 350

a. Laterally supported

b. Laterally unsupported

The design shear force is less than design shear strength. The unsupported length of the beam is 3 m. Steel grade is 410

7. Determine the design procedure of Gantry girder.