SRIVIDYA COLLEGE OF ENGINEERING AND TECHNOLOGY

Reg. No. : ☐☐☐☐☐☐☐☐☐☐☐☐☐

Question Paper Code : 10231

B.E./B.Tech. DEGREE EXAMINATION, MAY/JUNE 2012.

Sixth Semester

Civil Engineering

CE 2352/CE 62/CE 1354/10111 CE 603 — DESIGN OF STEEL STRUCTURES

(Regulation 2008)

Time : Three hours　　　　　　　　　　　　　　　Maximum : 100 marks

Use of IS 800 – 2007 is permitted

Assume data, if required.

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Define pitch of the rivet.

2. What do you mean by splitting of plates?

3. List out the different types of bolts.

4. Define slenderness ratio.

5. What do you mean by latticed columns?

6. What is the use of lug angle?

7. What do you mean by web buckling?

8. What do you mean by castellated beam?

9. What is the necessasity of curtailment of flange plates in plate girder?

10. What is the use of sag rod?

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11. (a) A single-riveted double-cover butt joint is used to connect two plates 12 mm thick. The rivets used are power driven 18 mm in diameter at a pitch of 60 mm. Find the safe load per pitch length and the efficiency of the joint.

Or

(b) A tie member consisting of angle section 80 mm × 60 mm × 8 mm is welded to a 8 mm gusset plate. Design the weld to transmit a load equal to the full strength of the member.

12. (a) Design a tension member of length 3.6 m between c/c of intersections and carrying a pull of 150 kN. The member is subjected to reversal of stresses.

Or

(b) Design a tension member to carry a load of 300 kN. Two angles placed back to back with long leg outstanding are desirable. The length of the member is 3m.

13. (a) Design a column with single lacing system to carry a factored axial load of 1500 kN. The effective height of the column is 4.2 m. Use two channels placed toe to toe.

Or

(b) Design a suitable slab base for a column section ISHB 400 @ 822 N/m. Supporting an axial load 500 kN. The base plate is to rest on a concrete pedestal of M 20 grade concrete.

14. (a) Design a simply supported (laterally supported) of effective span of 12 m to carry a factored load of 70 kN/m, the depth of the beam is restricted to 500 mm.

Or

(b) Design a riveted plate girder using Fe 415 steel for a span of 22 m to carry a load of 25 kN/m.

CE 6603 DESIGN OF STEEL STRUCTURES

15. (a) Design a channel section purlin for the following data :

Spacing of trusses = 4.2 m

Spacing of purlins = 2 m

Live load on galvanized iron roofing sheets = 0.6 kN/m².

Wind load = 1.4 kN/m².

Slope of main Rofter = 31°

Or

(b) (i) List out various elements of the roof truss and mark all its significance.   (8)

(ii) Explain the design principles of Gantry Girder.   (8)

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