G 1192   (Pages : 2)   Reg. No............................

Name............................

B.TECH DEGREE EXAMINATION, MAY 2015

Sixth Semester

Branch : Civil Engineering

CE 010 601—DESIGN OF STEEL STRUCTURES (CE)

(New Scheme—2010 Admission onwards)

[Regular / Improvement / Supplementary]

Time : Three Hours   Maximum : 100 Marks

Use of IS 800 : 2007, IS 875, IS 805, IS 801, IS 811, IS 6533 Part 2 and Steel Table is permitted.
Assume any missing data suitably.

Part A

Answer all questions.
Each question carries 3 marks.

I. Write short notes on the following terms :—

1 Limit state method.

2 Slab base.

3 Stay's in a water tank.

4 Flat width ratio.

5 Use of fire brick linning in a chimney.

(5 × 3 = 15 marks)

Part B

Answer all questions.
Each question carries 5 marks.

II. Explain briefly about :

6 HSFG bolt action in a lap joint.

7 Lacing system in a compound column.

8 Design steps for a circular girder.

9 Design step for a light guage steel beam with laterally supported system.

10 Derive the stress relation for self weight, linning and wind pressure in a chimney.

(5 × 5 = 25 marks)

Part C

*Answer **all** questions.*
Each full question carries 12 marks.

11. Calculate the safe tensile load carrying capacity of a angle section ISA 60 × 60 × 6 mm if 4 bolts are provided at a c/c distance of 50 mm.

Or

12. Design a strut member to carry a load of 70 kN . Length of the member is 1.5 m and is connected to a gusset plate of thickness 6 mm.

13. Design a compound column section using two channel sections placed back to back to carry a load of 900 KN if both ends of the structure is hinged. Length of the member is 3 m. Also design a suitable lacing system.

Or

14. For a column section to carry a load of 1200 KN, design a suitable battening system if the columns are placed toe to toe with an effective length of 3 m.

15. Design a rectangular steel water tank upto the supporting beam for a capacity of 120 m^3.

Or

16. Design a Circular steel water tank with hemispherical bottom for a capacity of 100 m^3. Design upto the supporting circular girder.

17. Design a light gauge steel column section to carry a load of 300 Kg. Use *two* channel sections placed back to back without having lips. The effective length of the member is 3 m.

Or

18. Design a light gauge steel beam section laterally supported to carry a load of 50 Kn/m if the effective span is 2.5 m. Assume two channel sections with lips placed back to back.

19. Design a self supporting steel chimney if the total height is 60 m and top diameter is 2.5 m. Wind pressure of 1.5 KN/m^2 is acting uniformly for a height of 20 from bottom and after that it is uniformly varying to 1.7 KN/m^2 at the top.

Or

20. Design the Anchor bolt, breach opening , base plate, and foundation of a self supporting chimney if the total height is 25 m and top diameter is 2 m. Wind pressure of 2 KN/m^2 is acting uniformly through out the structure.

(5 × 12 = 60 marks)