

B.TECH. DEGREE EXAMINATION, MAY 2016**Sixth Semester**

Branch : Civil Engineering

DESIGN OF STEEL STRUCTURES (C)

(Old Scheme—Prior to 2010 Admissions)

[Supplementary/Mercy Chance]



Time : Four Hours

Maximum : 100 Marks

*Use of IS Codes and Steel table is permitted.**Answer all questions.**Each question carries 20 marks.*

1. A laterally supported beam having an effective span of 9 m consists of ISMB 300 and cover plate of 250 mm × 16 mm connected to each flange by 20 mm dia. Rivets. Determine the safe uniformly distributed load, which the beam can carry in addition of its own weight.

Or

2. A welded plate girder consists of flange plates, 200 mm × 10 mm one at top and the other at the bottom and a vertical web plate 500 mm × 10 mm. Determine the permissible shear force on the section of the beam if 8 mm fillet welds are used for the connection. Assume all missing data.
3. A column 5 m long is fixed at the base and hinged at its top and carries an axial load of 1200 kN. Design the column, which shall consist of two I-sections at a suitable spacing. Take $f_y = 250 \text{ N/mm}^2$.

Or

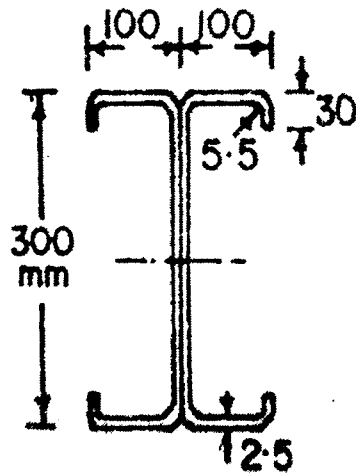
4. Design the suitable batten system for the column of above problem (Question No. 3).
5. Design an overhead rectangular tank of riveted steel, for a capacity of 2 lakh litres. The height of columns is to be kept as 11 m above the ground. The wind pressure intensity of 2 kN/mm^2 .

Or

6. Design the staging of the tank of problem 5, taking into account seismic forces, if the tank is to be constructed at Bombay.

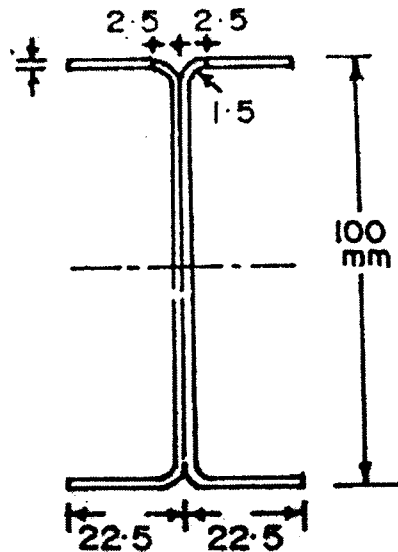
Turn over

7. Find the permissible axial load on the column section shown in Figure. The effective length of column is 5 m. Steel has yield point of 350 N/mm^2 . Assume missing data.



Or

8. The beam having cross-section shown in Figure is laterally supported at 1 m interval. Compute the moment of resistance, taking $M_1 = -0.7 M_2$. Assume missing data.



9. A self-supporting lined chimney of height 100 m and top diameter 3 m is located in Madurai. Design the thickness of chimney plate.

Or

10. Explain in detail the general principles of design of stacks.

(5 × 20 = 100 marks)