

Roll No

MVSE-301(C)

M.E./M.Tech., III Semester

Examination, June 2016

Design of Steel Structures (Elective - I)

Time : Three Hours

Maximum Marks : 70

Note: i) Solve any five questions.

ii) All questions carry equal marks.

iii) Assume missing data suitably if required.

iv) Use of codes and steel tables is permitted.

1. a) Discuss limit state method design and allowable stress design.
b) Explain concept of section. Discuss the properties of various sections.
2. a) What are multiple column curves? Why are several curves necessary to determine the strength of compression member?
b) Calculate the design compressive load for a column 350@ 710.2N/m, 3.5m high. The column is restrained in direction and position at both the ends. It is to be used as an uncased column in a single storey building.
3. a) Explain St-venant torsion and warping torsion.
b) Design a continuous beam of span 5.6m, 6m and 5.6m carrying a UDL of 40kN/m and laterally unrestrained with a bearing length of 150mm.

4. Design a laterally unrestrained beam to carry a UDL of 60kN/m. The beam is unsupported for a length of 1.4m and is simply placed on longitudinal beams at its ends.
5. A non-sway column in a building frame with flexible joints is 4.5m high and subjected to the following load and moment factored axial load = 400kN, factored moment M_2 , at top of column = 25.0kN-m at bottom of column = 40kN-m. Design a suitable beam-column. Take the effective length of column as 0.8L along both the axes.
6. Discuss the following checks for beam columns
 - a) Local capacity of section
 - b) Overall member strength
7. Discuss the design methods for beam subjected to lateral torsional buckling.
8. Write short notes on any four of the following:
 - a) Effect of residual stresses
 - b) Robertson's design curve.
 - c) Factors affecting lateral stability of beams
 - d) Effect of slenderness ratio on beam-columns
 - e) Moment amplification factor
