Registration No:

Total Number of Pages : 01   **M.TECH**

M.TECH 1ST SEMESTER REGULAR EXAMINATIONS, DECEMBER 2017
ELASTIC STABILITY AND BEHAVIOUR OF METAL STRUCTURES
Branch: SE, Subject Code:MSEPC1020
Time: 3 Hours
Max Marks : 70
The figures in the right hand margin indicate marks.

PART-A   (10 X 2=20 MARKS)

1. Answer the following questions.
a) What do you mean by plastic hinge?
b) Differentiate between yield load and ultimate load.
c) What do you mean by lower bound and upper bound theorem?
d) What is the value of shape factor for an isosceles triangle of base **b** and altitude **h**?
e) Define beam-column.
f) What is reserve strength?
g) Define ductility.
h) What do you mean by mechanism condition?
i) What is warping function?
j) State uniqueness theorem.

PART-B   (5 X 10=50 MARKS)

Answer any five questions from the following.

2. a. Find the elastic buckling load of cantilever column using fourth order differential equation of beam column.
   b. State the necessary and sufficient conditions for general collapse condition of a structure.
3. a. What do you mean by pure torsion?
   b. Explain the warping effect of thin walled open section subjected to pure torsion
4. a. Derive the equation for bending of plate subjected to distributed load perpendicular to middle plane of plate.
   b. Calculate the shape factor of circular cross section.
5. a. Discuss the differential equation for lateral buckling of cantilever beam.
   b. What do you mean by ideal column with examples?
6. a. Find the ultimate load for propped cantilever beam of span **'l'** subjected to udl of w/m.
   b. State the fundamental case of buckling of prismatic bar.
7. a. Derive the warping displacement for pure torsion of channel section.
   b. Describe load factor with examples.
8. a. Derive the differential equation of beam column with continuous lateral load.
   b. State upper bound and lower bound theorem with examples.

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