Registration No:

Total Number of Pages : 01   M.TECH

AR-19

M.TECH 1ST SEMESTER EXAMINATIONS NOV/DEC 2019
SE, MPCSE1020
ELASTIC STABILITY AND BEHAVIOR OF METAL STRUCTURES

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) Define beam-column.
   (b) What is meant by elastically restrained column?
   (c) Why energy approach in structural analysis is considered superior to other methods?
   (d) What is an Euler ideal column?
   (e) Differentiate between yield load and ultimate load.
   (f) What do you mean by mechanism condition?
   (g) Define plastic section modulus.
   (h) What do you mean by strain hardening
   (i) Define Warping torsion.
   (j) Outline the slope deflection equations of beam.

PART-B   (5 X 10=50 MARKS)

Answer any five questions from the following.

2. a) Using higher order differential equation, find the critical load for a column one end fixed and

   b) Evaluate the critical load for eccentrically loaded column.

3. a) From first principles, formulate the expression for buckling load of a column fixed at one end and free at other end.

   b) Assess differential equation for beam column.

4. a) Defend the approximate methods used in the stability analysis and discuss their merits
   b) Enumerate beam column action? List out few examples that are subjected to beam Column action.

5. Determine the shape factor for the rectangular and circular section.

6. a) State the advantages of plastic analysis over elastic analysis.
   b) Explain the lower and upper bound theorem.

7. a) Analyze the main difference between torsional and flexural buckling with appropriate examples.
   b) Examine the expression for pure torsion of thin walled bars of open cross section.

8. Write Short notes on
   a) Plastic moment capacity
   b) Collapse load

==0==