GIET MAIN CAMPUS AUTONOMOUS,
GUNUPUR - 765022

Registration No: | | | | | | | | | | | **M.TECH**

Total Number of Pages : 1

M.TECH 1ST SEMESTER SUPPLE EXAMINATIONS, DECEMBER 2018

ELASTIC STABILITY AND BEHAVIOR OF METAL STRUCTURES

Branch: SE, Subject Code:MSEPC1020

(Regulations 2017)

Time: 3 Hours **Max Marks : 70** **Question Code: SD18002030**

PART-A (10 X 2=20 Marks)

1. Answer the following questions.

a. Differentiate between yield load and ultimate load.
b. Define Longitudinal Strain And Lateral Strain?
c. Write an expression for flexural rigidity of plate.?
d. Differentiate between lower bound and upper bound theorem.
e. Find the shape factor of a rectangular section of width 'b' and depth 'd'.
f. State Rankine's formula.
g. State the advantage of applying trigonometric series on the study of deflection curve.
h. Give the examples of buckling of structural members.
i. What do you mean by stability behavior of metal structure?
j. State the various names of compression members as per application.

PART-B (5 X 10=50 Marks)

Answer any five questions from the following.

2.a) Explain the stress distribution of rectangular beam under bending in successive stages beyond the elastic limit and up to stage of plastic limit. [5]

b) Determine an approximate value for a critical load of an axially loaded column hinged at one end and fixed at other using energy method. [5]

3.a) Find out the critical stress and critical moment for an I beam subjected to couples at end. [5]

b) A thin walled bar of open cross section is subjected to couples at the end. Derive the expression for warping displacement. [5]

4.a) Find the ultimate load for a propped cantilever beam of span l subjected to udl of w/m. [5]

b) Explain Slenderness ratio with necessary assumptions . [5]

5.a) Derive an expression for the deflection curve of beam column subjected to udl of q/metre run. [5]

b) Find the deflection at the centre of the beam-column for above. [5]

6. a) Derive the differential equation for lateral buckling of beams. [5]

b) Derive the expression for critical load for column fixed at both the ends . [5]

7.a) Derive the expression for critical load for column fixed at one end and hinged at other end. [5]

b) State the advantages of plastic analysis over elastic analysis. [5]

8.Write Short notes on [5]

a) Torsional rigidity
b) Plastic analysis of frame [5]

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