Code No: R22012 **R10** SET - 1

II B. Tech II Semester Supplementary Examinations, April-2018
STRENGTH OF MATERIALS
(Civil Engineering)

Time: 3 hours Max. Marks: 75

Answer any **FIVE** Questions
All Questions carry **Equal** Marks
~~~~~~~~~~~~~~~~~~~~~~~~~

1. a) Find the deflection of a beam by moment area method. (10M)
   b) Find the slope and deflection of a simply supported beam carrying point load at the midpoint by Double Integration method. (5M)

2. A steel cylinder 0f 320mm external diameter is to be shrunk to another steel cylinder of 160mm internal diameter. After shrinking the diameter at the junction is 280mm and radial pressure at the common junction is 30N/mm^2. Find the original difference in radii at the junction. Take E = 2 x 10^5 N/mm^2 (15M)

3. a) Derive an expression for a member subjected to stresses on an oblique plane. (8M)
   b) Define and explain the maximum principle strain theory of failure. (7M)

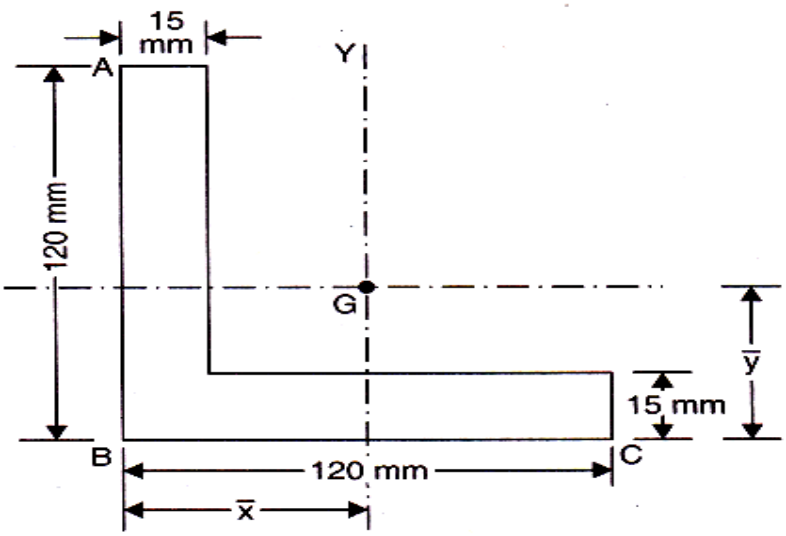
4. Derive the expression T/J = τ/R = Cθ/ l (15M)

5. a) Derive the equation for the Euler's crippling load for a column with one end fixed and the other end free. (12M)
   b) What are the limitation of Euler's theory? (3M)

6. Find the resultant stress when a column of rectangular section is subjected to an eccentric load. (15M)
~~~~~~~~~~~~~~~~~~~~~~~~~

Code No: R22012 **R10** SET - 1

7. A simply supported beam of span 4.2m carries a load of 800N at its centre. The section of the beam is an angle as shown in the fig below The load of the line passes through the centriod of the section and is along line YG. Determine the stresses at the points A, B and C of mid section of the beam and deflection of the beam at the mid point (15M)



8. Find the forces in all the members of the truss shown in below (15M)