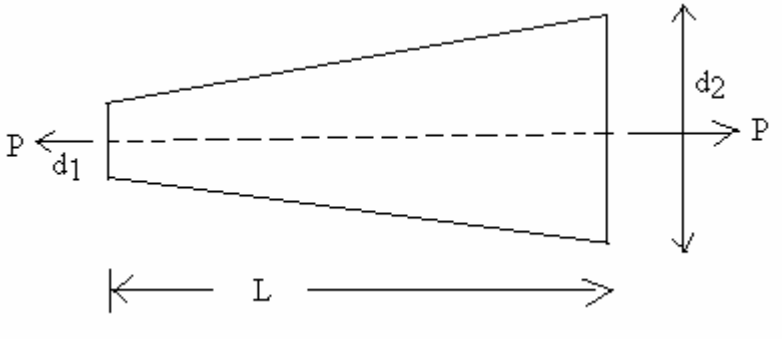
Code.No: 43034 | R07 | SET-4

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
II.B.TECH - I SEMESTER REGULAR EXAMINATIONS NOVEMBER, 2009
FOUNDATION OF SOLID MECHANICS
(AERONAUTICAL ENGINEERING)

Time: 3hours **Max.Marks:80**

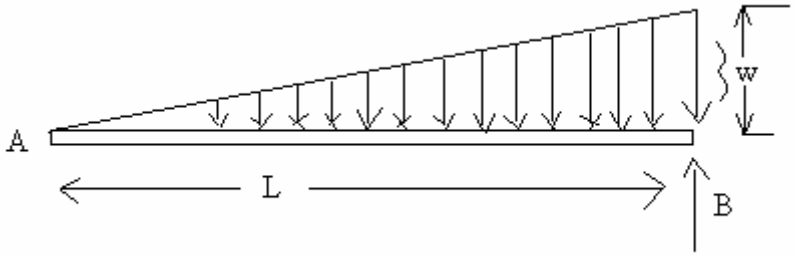
Answer any FIVE questions
All questions carry equal marks
- - -

1.a) Explain the different types of stresses with neat sketches.



b) For the tapered bar shown, derive the equation for total elongation [6+10]

2.a) For the beam shown in figure, Draw the BMD and determine the location where maximum bending moment occurs



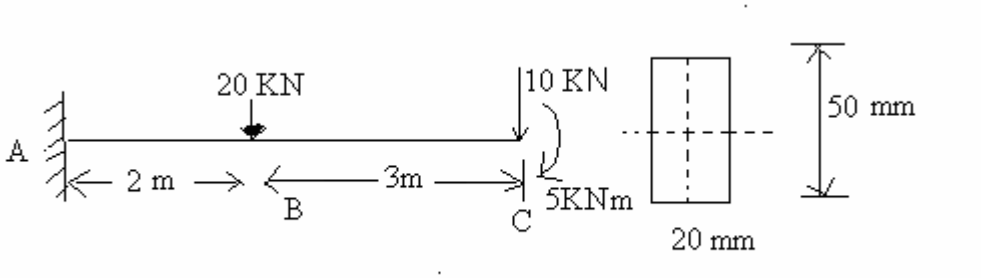
b) Explain the significance of point of Contra-flexure. [10+6]

3.a) Explain the presence of shear stresses in beams due to transverse shear loads

b) Derive the condition for maximum shear stresses in triangular section [8+8]

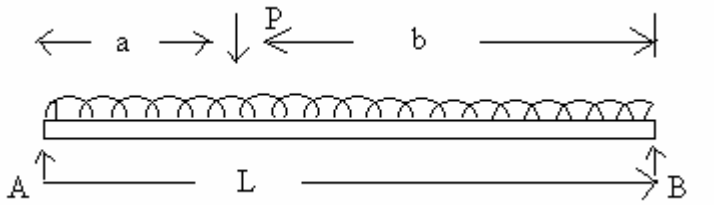
Cont....2

4.a) What are the assumptions in simple bending theory



b) Determine the maximum bending stress for the beam shown above [6+10]

5.a) Define the radius of curvature and deflection



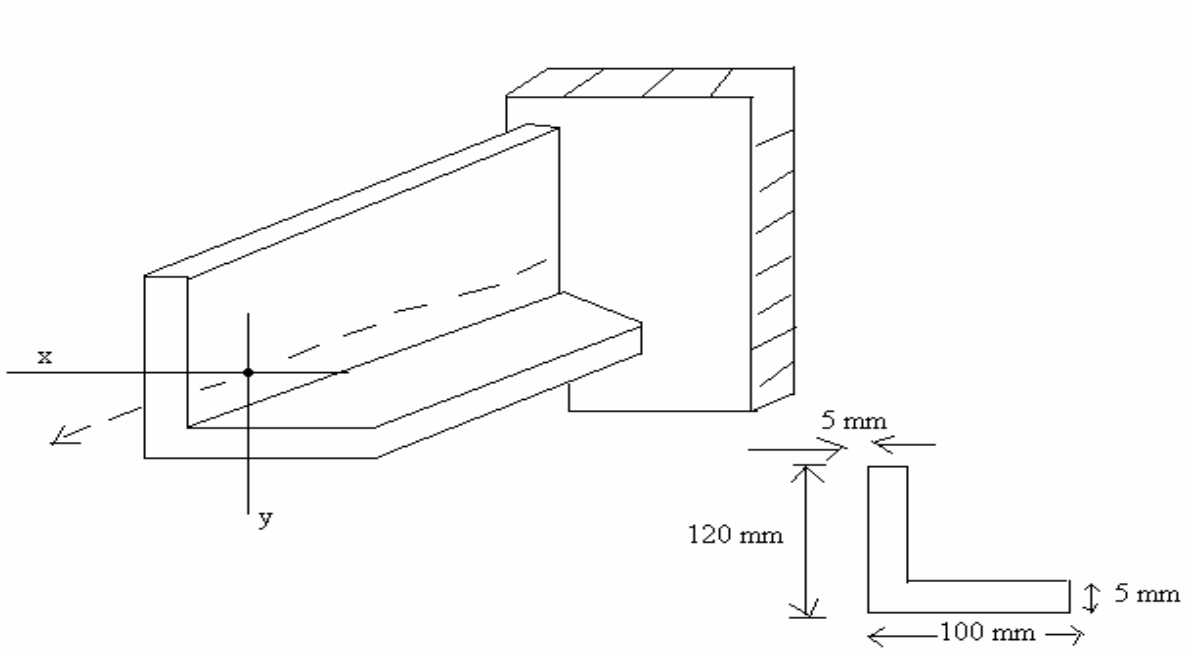
b) For the SSB, with U.D.L and point load P shown above, determine the deflection under load P using double integration method [8+8]

6. Derive the equation for change in diameter, change in length and change in volume when a thin walled cylinder is subjected to an internal pressure. Use the standard rotations. [16]

7.a) Explain double rivetted butt joint with double cover plate with the help of neat sketch

b) What is the effect of considering friction between the joints. [10+6]

8.



Determine I_X, I_y and I_{xy} for the unsymmetrical section shown. [16]