Code.No: 43034 | R07 | SET-1

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

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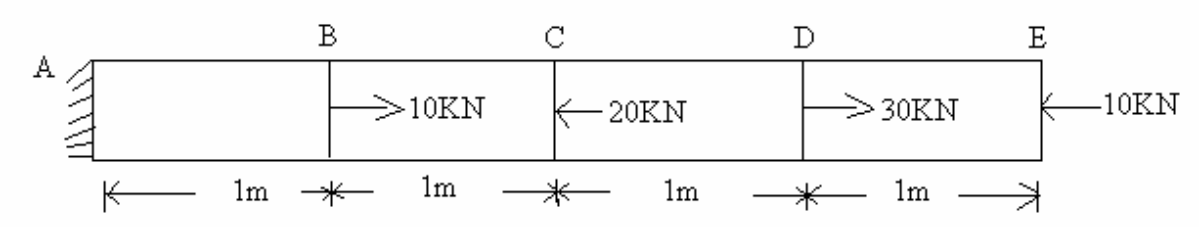
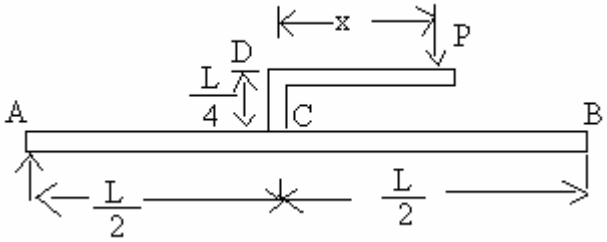
1.



For the steel bar shown above of diameter 100mm, draw the axial load diagram, and determine.

a) Stresses in each member
b) Net elongation [16]

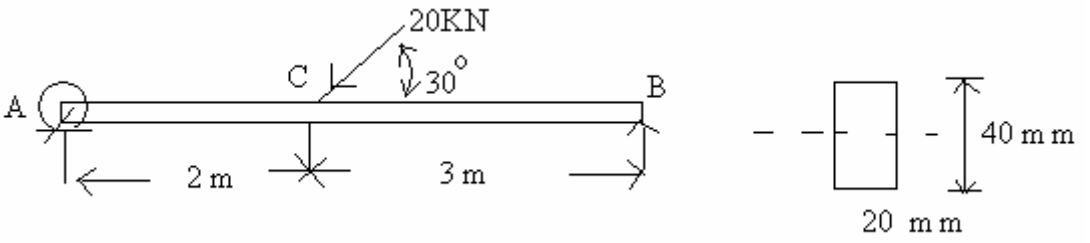
2.a) What is the importance of SFD and BMD



b] Draw the SFD and BMD for the beam shown above. What should be the distance 'x' such that the reaction at A is zero. [6+10]

3.a) Derive the flexure equation of bending with assumptions using standard notations

b)



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

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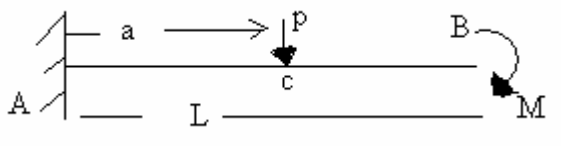
4.a) Explain the presence of shear streeses due to transverse shear loads with the help of a neat sketch.

b) Derive the Equation for shear stress of circular section and draw the shear stress variation. [8+8]

5.a) Derive the flexure Equation of deflection

b)



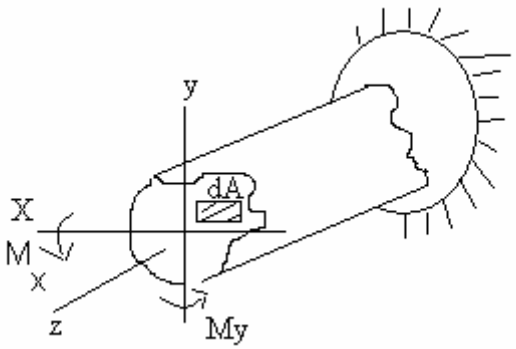
For the beam shown above, determine the slope and deflection at B, using method of superposition. [8+8]

6.a) Explain the stresses induced in thin walled pressure vessel with the help of a neat sketch when subjected to internal pressures

b) A cylinder of internal diameter 2 m and thickness 5mm is subjected to an internal fluid pressure of $1.5\frac{N}{mm^2}$. Determine the longitudinal stress and circumfarential stresses. [10+6]

7. What are the types of welded joints? Show various welded joints subjected to Bending loads, shear loads and Twisting loads with the help of neat sketches. [16]

8. For the unsymmetrical section shown, Derive the Equation for bending stress and locate the neutral axis [16]



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