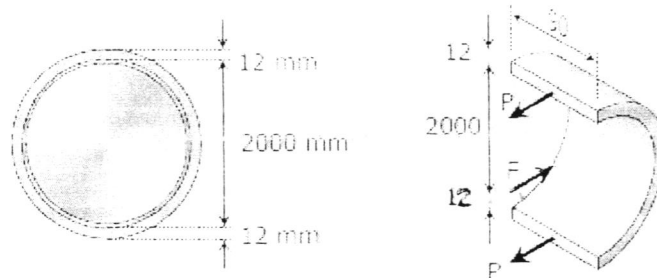




Answer Only Four Questions including Q1

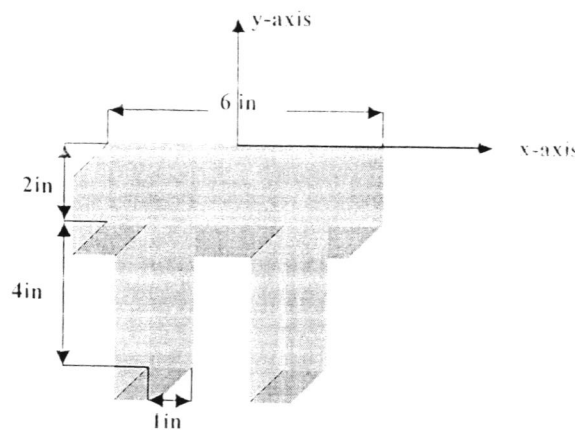
Q1/ At a temperature of 80°C, a steel tire 12 mm thick and 90 mm wide that is to be shrunk onto a locomotive driving wheel 2 m in diameter just fits over the wheel, which is at a temperature of 25°C. Determine the contact pressure between the tire and wheel after the assembly cools to 25°C. Neglect the deformation of the wheel caused by the pressure of the tire.

Assume $\alpha = 11.7 \times 10^{-6} \text{ m}/(\text{m} \cdot ^\circ\text{C})$ and $E = 200000 \text{ MPa}$



(25 Marks)

Q2/ The centroid of the beams cross-sectional area is (0, -2.2) , Find the moment of inertia about \bar{x} -axis?

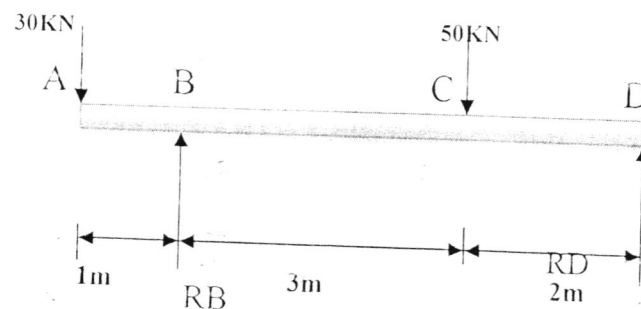


(25 Marks)



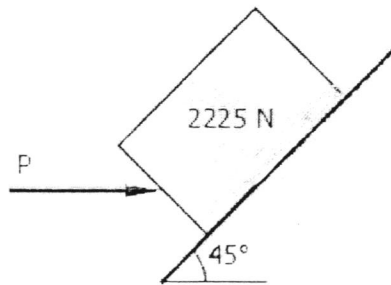
(25 Marks)

Q3/ Write shear and moment equations for the beam and then draw their diagram?

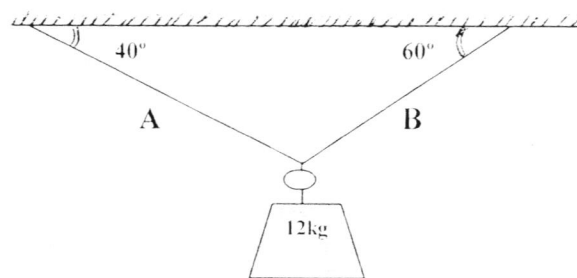


H.A. Faris

Q4 / The 2225 N block is in contact with 45° incline. The coefficient of static friction is 0.25. Compute the value of the horizontal force P necessary to just start the block up the incline? (25 Marks)



Q5 / A 12Kg mass is hung from two cables as show in the figure, what are the tensions in cables A & B ? (25 Marks)



A circular stamp is visible, partially obscured by a handwritten signature that appears to read "H. A. Fawis".

Good luck