

Indian Institute of Science

UE 204: Makeup Test

Date: 12/4/14.

Duration: 10.00 a.m.–12.00 noon

Maximum Marks: 100

1. Three identical wires of length L , area A and Young modulus E are attached to a horizontal rigid bar as shown in Fig. 1. The wires *cannot* take compressive stresses. Using a 1D approximation $\tau = E\epsilon$, find the stresses in the three wires when (i) $x = b/2$ (ii) $x = 5b/4$. Find also the deflections under the load W in these two cases. (50)
2. Find the shear force (along the radial direction), axial force (along the tangential direction) and bending moment as a function of θ for the semicircular beam shown in Fig. 2. (50)

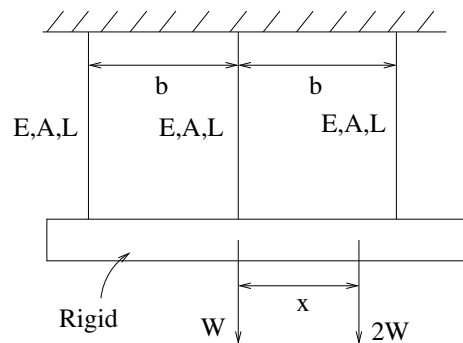


Figure 1:

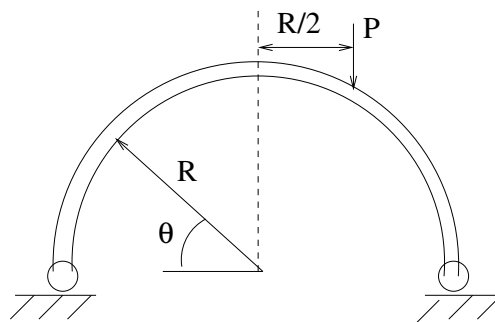


Figure 2: