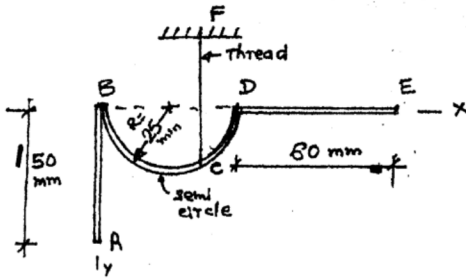


## TYPE 2 C.G. OF WIRES

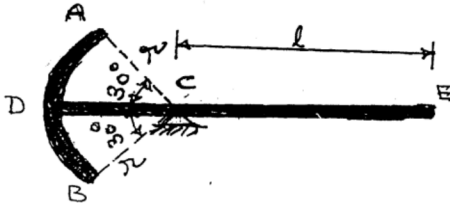
1. Find the position of C ( $x_c$ ,  $y_c$ ) for suspending the wire of uniform weight of 4 N/m which is bent as shown in the figure so that the portion DE remains horizontal in equilibrium position.

( Ans :  $X = 43.94$  ,  $Y = 12$  )



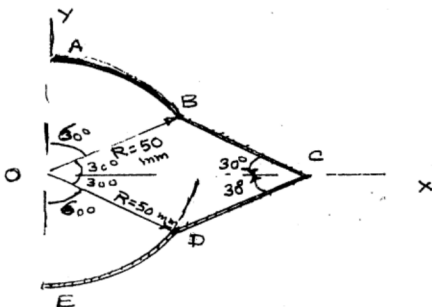
2. The figure below shows is formed of a thin homogeneous wire. Find the length 'l' of portion CE of the wire for which the centre of gravity of the figure is located at C.

( Ans :  $1.732 r$  )



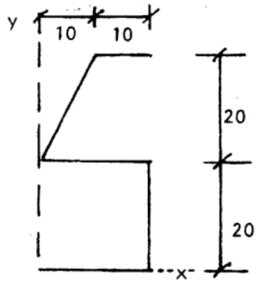
3. Determine the centre of gravity of the wire ABCDE of uniform weight of 2 kN/m bent as shown in the figure.

( Ans :  $X = 43.94$  )



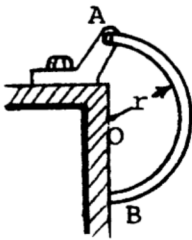
4. Locate the centroid of the 10 mm diameter bar bent in xy-plane as shown in fig. All dimensions in cm.

( Ans :  $X = 11.5$  ,  $Y = 18.1$  )



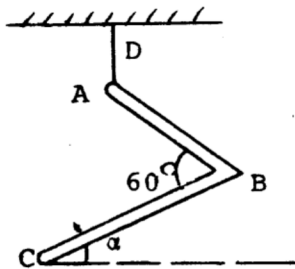
5. A uniform semicircular rod of weight  $W$  and radius  $r$  is attached to a pin at A and bears against a frictionless surface at B. Determine the reactions at A and B.

( Ans :  $H_A = R_B = 2W/3\pi$  ,  $V_A = W$  )



6. A uniform rod ABC is bent at an angle  $60^\circ$  with lengths  $AB = 2\text{m}$   $BC = 4\text{m}$  and is suspended by a string AD. Determine the angle  $\alpha$  defining the position of equilibrium.

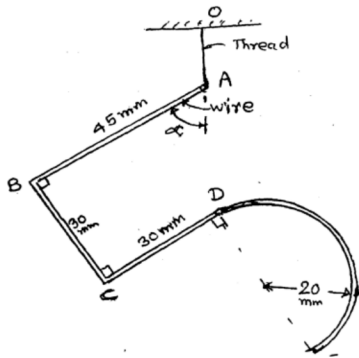
( Ans :  $19.11^\circ$  )



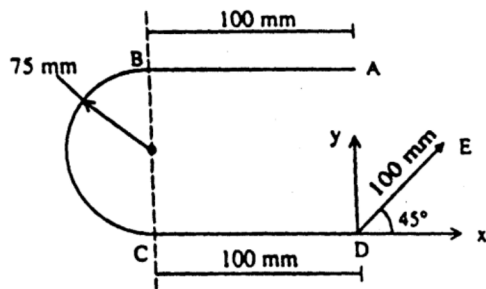
7. A wire is suspended as shown in the figure. Find the angle ' $\alpha$ ' for equilibrium.

Take  $AB = 45\text{ mm}$ ,  $BC = CD = 30\text{ mm}$  and semicircle DE of radius  $20\text{ mm}$ .

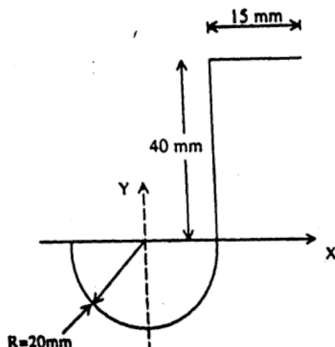
( Ans :  $53.56^\circ$  )



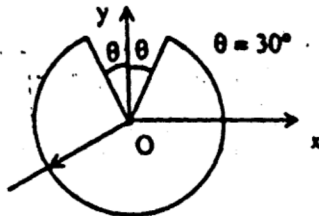
8. A uniform wire is bent into a shape shown in figure. Calculate the position of the C.G.  
( Ans :  $X = 77.065$ ,  $Y = 67.6$  )



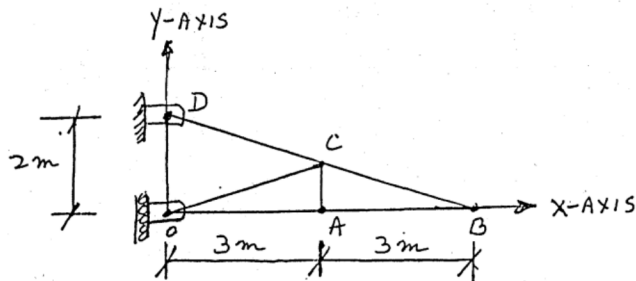
9. A uniform wire is bent into a shape shown in figure. Calculate the position of the C.G.  
(Ans :  $X = 10.29$  ,  $Y = 5.1$  )



11. A uniform wire is bent into a shape shown in figure. Calculate the position of the C.G.  
( Ans :  $Y = -0.0176 r$  )



12. Locate the C.G. of the truss assuming all members of identical section.  
( Ans :  $X = 2.712$  ,  $Y = 0.51$  )



13. Find the length  $L$  of a portion of bent up wire shown in figure. The C.G. of a whole figure is at point O.  
( Ans :  $L = 4$  )

