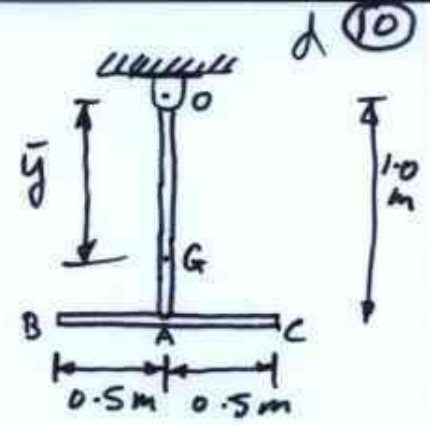


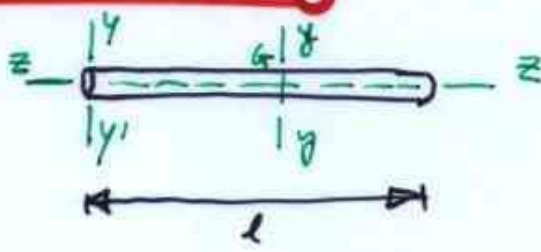
PENDULUM MADE OF 2 slender rods

50 N weight each.

find M.o.I about axis through O and through G.



FOR A ROD



$I_{zz} = 0$   
 $I_{yy} = \frac{1}{12} m l^2$   
 $I_{yy'} = \frac{1}{3} m l^2$

FIND  $I_0$  ... *mass*

$(I_{OA})_0 = \frac{1}{3} \left( \frac{50}{g} \right) (1.0)^2 = \underline{1.699 \text{ kg m}^2}$

ROD OA

$(I_{BC})_0 = \frac{1}{12} m l^2 + m d^2$   
 $= \frac{1}{12} \left( \frac{50}{g} \right) (1.0)^2 + \left( \frac{50}{g} \right) (1.0)^2$   
 $= \underline{5.522 \text{ kg m}^2}$

ROD BC

$\therefore I_0 = (I_{OA})_0 + (I_{BC})_0 = \underline{7.22 \text{ kg m}^2}$  **COMBO**

To get  $I_G$ , need to find  $\bar{y}$

Def  $\bar{y} = \frac{\sum \bar{y} m}{\sum m} = \frac{0.5 \left( \frac{50}{g} \right) + 1.0 \left( \frac{50}{g} \right)}{\frac{50}{g} + \frac{50}{g}} = 0.75 \text{ m}$

$\frac{50}{g} = \text{mass}$

PARALLEL AXIS THM

$I_0 = I_G + m d^2 \Leftrightarrow I_G = I_0 - m d^2 ; d = \bar{y}$

$I_G = 7.22 - \left( \frac{100}{g} \right) (0.75)^2$

$I_G = \underline{1.486 \text{ kg m}^2}$

$g = 9.81 \text{ m s}^{-2}$