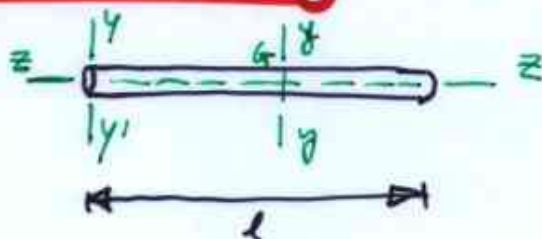


PENDULUM MADE of 2 slender rods
50 N weight each.

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

For a ROD



$$I_{zz} = 0$$

$$I_{yy} = \frac{1}{12} m l^2$$

$$I_{y'y'} = \frac{1}{3} m l^2$$

FIND I_O ... *mass*

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

ROD OA

$$(I_{BC})_O = \frac{1}{2} m l^2 + m d^2$$

ROD BC

$$= \frac{1}{12} \left(\frac{50}{g} \right) (1.0)^2 + \left(\frac{50}{g} \right) (1.0)^2$$

$$= \underline{5.522 \text{ kg m}^2}$$

$$\therefore I_O = (I_{OA})_O + (I_{BC})_O = \underline{7.22 \text{ kg m}^2}$$

COMBO

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

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

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

PARALLEL AXIS THM

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

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

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

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

