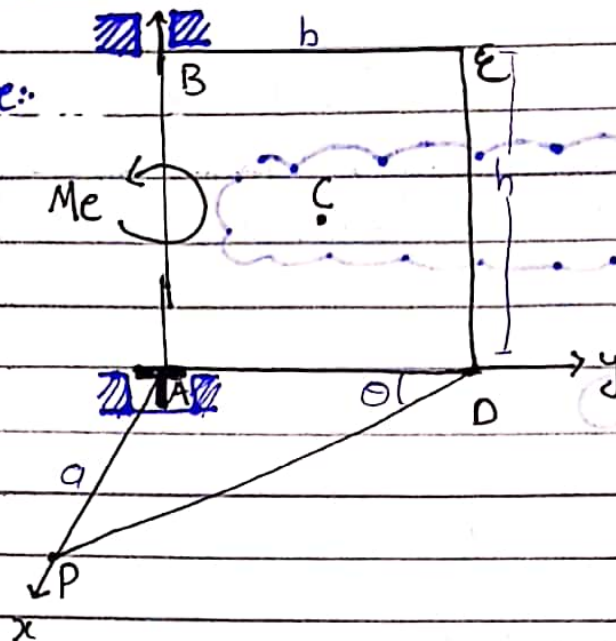


Solution: 3

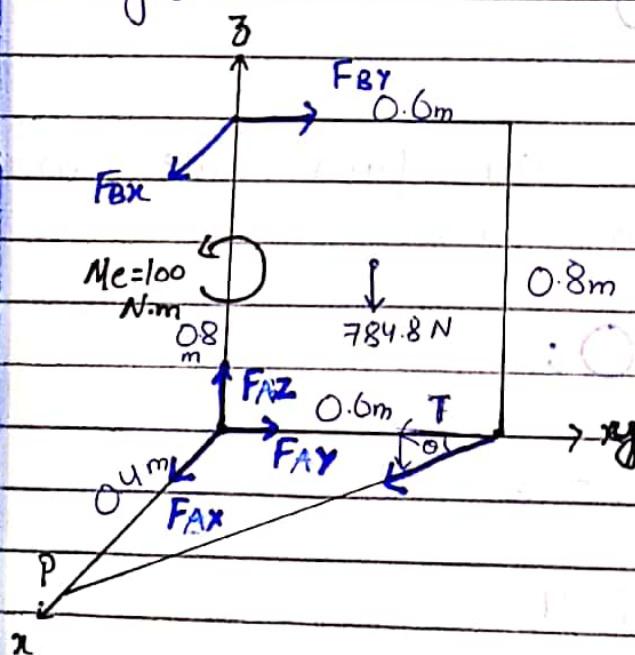
Figure:



Given Data:

$h = 0.8 \text{ m}$
 $b = 0.6 \text{ m}$
 $a = 0.4 \text{ m}$
 $M_{ax} = 80 \text{ kg}$
 $M_{ei} = 100 \text{ N.m}$

Lets start by drawing the free body diagram:



$$\theta = \arctan(0.4/0.6)$$

$$\theta = 33.69^\circ$$

Equations of Equilibrium:

$$\sum F_x = 0;$$

$$F_{Ax} + F_{Bx} + T \sin 33.69 = 0$$

$$F_{Ax} + F_{Bx} + 0.5546 T = 0 \quad \text{--- (1)}$$

$$\rightarrow \Sigma F_y = 0$$

$$F_{Ax} + F_{By} - T \cos 33.69 = 0$$

$$F_{Ax} + F_{By} - 0.832T = 0 \quad \text{--- (2)}$$

$$\uparrow \Sigma F_z = 0$$

$$F_{Az} - W = 0$$

$$F_{Az} - (80)(9.81) = 0$$

$$F_{Az} = 784.8$$

Similarly, we can find the moment around each axis:

$$\odot \Sigma M_x = 0;$$

$$-F_{By} \times 0.8 - 235.44 = 0$$

$$-F_{By} \times 0.8 = 235.44$$

$$F_{By} = -235.44 / 0.8$$

$$F_{By} = -294.3$$

$$\odot \Sigma M_y = 0$$

$$0.8 \times F_{Bx} = 0;$$

$$F_{Bx} = 0$$

$$\textcircled{5} \Sigma M_3 = 0$$

$$100 - T \sin(33.69) \times 0.6 = 0$$

$$100 - 0.3328T = 0$$

$$0.3328T = 100$$

$$T = 300.47$$

From eq ①

$$F_{Ax} + 0 + 0.5546(300.47) = 0$$

$$F_{Ax} = -166 \text{ N}$$

From eq ②

$$F_{Ay} - 294.3 - 0.832(300.47) = 0$$

$$F_{Ay} = 544.3 \text{ N}$$