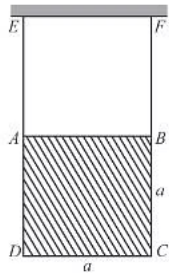


Ques.

A thin uniform square plate $ABCD$ of side a and mass m is suspended in vertical plane as shown in the figure. AE and BF are two massless inextensible strings. The line AB is horizontal. Find the tension in the string AE just after BF is cut is $2mg/x$, then is :

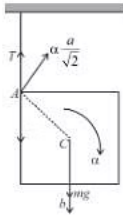


Let b and α

are linear according to centre of mass and angular according of the plane, just after BF is cut

$$mg - T = mb \quad \dots(1)$$

Taking torque about centre of mass



$$\frac{Ta}{2} = \frac{ma^2}{6} \alpha \quad \dots(2)$$

$$mg = mb + \frac{ma\alpha}{3}$$

$$\Rightarrow g = b + \frac{a\alpha}{3}$$

$$\text{and } b = \alpha \frac{a}{2}$$

$$\therefore g = b + \frac{2b}{3} = \frac{5b}{3}$$

$$\Rightarrow T = mg - \frac{m3g}{5} = \frac{2mg}{5}$$

The correct answer is: 5