A boy of is sitting on the horizontal platform of a joy wheel at a distance of 5m from the center. The wheel begins to rotate and when the angular speed exceeds 1rad/s the boy slips. The coefficient of friction between the boy and the wheel is(g=10)

Solution

The boy slips when centrifugal force exceeds the limiting force of friction. If ω is the maximum angular velocity of wheel when boy just slips,

$$\mu mg = mr\omega^2$$

i.e., $\mu = \frac{r\omega^2}{g}$

$$\mu = \frac{5 \times 1^2}{10} = 0.5$$

So, answer 1) 0.5 is right.