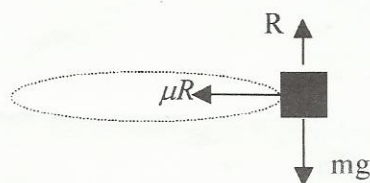


2000

6. (a) A particle is placed on a horizontal rotating turntable, 10 cm from the centre of rotation. There is a coefficient of friction of 0.4 between the particle and the turntable. If the speed of the turntable is gradually increased, at what angular speed will the particle begin to slide?



$$R = mg$$

$$\mu R = m r \omega^2$$

$$0.4(mg) = m(0.1)\omega^2$$

$$\Rightarrow \omega = \sqrt{4g} \quad \text{or} \quad 6.26 \text{ rad s}^{-1}$$

\therefore The particle slides if $\omega > \sqrt{4g}$

5

5

5

5

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