n°3

$m = 8\,gr$

$R = 5{,}9\,cm = 5{,}9 \cdot 10^{-2}\,m = 0{,}059\,m$

$\mu = 0{,}95$

(A)

$$F_{CENTR} = F_{ATT}$$

$$m\,a_{CENT} = \mu\,F_{\perp}$$

$$m\,\frac{v^2}{R} = \mu\,m\,g$$

MCU RIPASSO

$v = \frac{2\pi R}{T} = \omega R$ VEL. ANGOLARE

$f = \frac{1}{T}$ $\quad \omega = \frac{2\pi}{T}$

$v = 2\pi R f$ $\quad \omega = 2\pi f$

$$m\,(\omega R)^2 \cdot \frac{1}{R} = \mu\,m\,g$$

$$m\,\omega^2 \frac{R^2}{R} = \mu\,m\,g$$

$$\omega = \sqrt{\frac{\mu g}{R}} = \sqrt{\frac{0{,}95 \cdot 9{,}8\ \frac{m}{s^2}}{0{,}059\,m}} = 12{,}6\ \frac{rad}{s}$$

$$\omega = 2\pi f \rightarrow f = \frac{\omega}{2\pi} = \frac{12{,}6\ \frac{rad}{s}}{2\pi} = 2\ Hz$$

(B) $f_c = m\frac{v^2}{R} = m\,\frac{\omega^2 R^2}{R} = 8 \cdot 10^{-3}\,kg \left(12{,}6\ \frac{rad}{s}\right)^2 \cdot 5{,}9 \cdot 10^{-2}\,m =$

$$f_c = 0{,}0745\ N$$