

2017

A7

$$(a) \quad \underline{r\omega^2}$$

$$(b) \quad \omega r_c = \omega t z_c = \omega \frac{r\omega}{g}$$

$$\omega r_c = \frac{dr}{dt} \quad (*)$$

$$\frac{dr}{r} = \frac{\omega^2}{g} \cdot \omega t \cdot dt = \text{KINEMATICS}$$

$$(c) \quad \int \frac{r_{p2}}{r_{p1}} = \frac{\omega^2}{g} \omega t \cdot t$$

$$(d) \quad x = \omega t \cdot t \quad (*)$$

$$t = \frac{x}{\omega} = \frac{0.01}{2.62 \times 10^{-2}} = \underline{3.8 \times 10^{-5} \text{ s}}$$

$$(e) \quad \omega = \frac{2\pi N}{t} = \frac{2\pi \times 12000}{60} = \underline{1260 \text{ rad/s}}$$

$$(f) \quad z_c = \frac{r\omega^2}{g} = \underline{1.61 \times 10^4}$$

$$(g) \quad t = \frac{1}{\frac{\omega^2}{g} \omega t} \ln \frac{r_{p2}}{r_{p1}} = \frac{r_{p1}}{z_c \omega t} \ln \frac{r_{p2}}{r_{p1}} = \underline{23 \text{ s}}$$