

$$v_{max} = \omega_0 X_{max} = 2.0 \times 6 \times 10^{-2} \text{ (D)}$$

$$= 1.2 \text{ ms}^{-1}$$

$$E_k = E - E_p \text{ (E)}$$

$$= \frac{1}{2} K [X_{max}^2 - x^2]$$

$$= \frac{1}{2} \times 40 [36 \times 10^{-4} - 4 \times 10^{-4}]$$

$$= 64 \times 10^{-3} \text{ J}$$

$$v_{max} = 2 X_{max} = 12 \text{ cm} \text{ (F)}$$

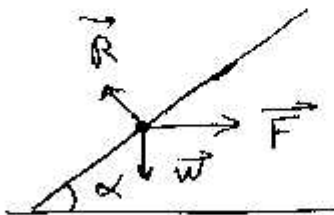
الم التسمى ورقة العمل

$$F = ILB \sin \theta \text{ (1)}$$

$$= 10 \cdot 0.2 \cdot 0.1 \cdot 1$$

$$= 0.2 \text{ N}$$

تسمى التأثير:
الاجل
التي



$$\sum \vec{F} = 0 \text{ (2)}$$

$$\vec{W} + \vec{F} + \vec{R} = 0$$

$$-mg \sin \alpha + F \cos \alpha + 0 = 0$$

$$m = \frac{F \cos \alpha}{g \sin \alpha} = \frac{0.2 \frac{\sqrt{3}}{2}}{10 \cdot \frac{1}{2}}$$

$$m = 2\sqrt{3} \times 10^{-2} \text{ kg}$$

الم التسمى ورقة العمل

$$\sum \vec{F} = 0 \text{ (1)}$$

$$\vec{W} + \vec{F}_{so} = 0$$

$$W - F_{so} = 0 \Rightarrow W = F_{so}$$

$$F_{so} = F_{so} = K X_0$$

$$mg = K X_0 \Rightarrow X_0 = \frac{mg}{K}$$

$$X_0 = \frac{0.1 \times 10}{40} = \frac{1}{40} \text{ m}$$

$$X_{max} = \frac{v}{\omega} = 6 \text{ cm} \text{ (A) (2)}$$

$$\bar{x} = X_{max} \cos(\omega_0 t + \varphi)$$

$$\omega_0 = \sqrt{\frac{K}{m}} = \sqrt{\frac{40}{0.1}} = 20 \text{ rad s}^{-1}$$

φ هو

$$0 = X_{max} \cos \varphi$$

$$\cos \varphi = 0 \Rightarrow \varphi = \begin{cases} \frac{\pi}{2} \text{ rad} \\ 3\frac{\pi}{2} \text{ rad} \end{cases}$$

$$t=0 \Rightarrow \bar{x} = -\omega_0 X_{max} \sin \varphi$$

$$\varphi = \frac{\pi}{2} \Rightarrow \bar{x} < 0 \text{ موصول}$$

$$\varphi = 3\frac{\pi}{2} \Rightarrow \bar{x} > 0 \text{ مرفوض}$$

$$\bar{x} = 6 \times 10^{-2} \cos(20t + \frac{\pi}{2})$$

$$\vec{F} = -K \bar{x} \text{ (B)}$$

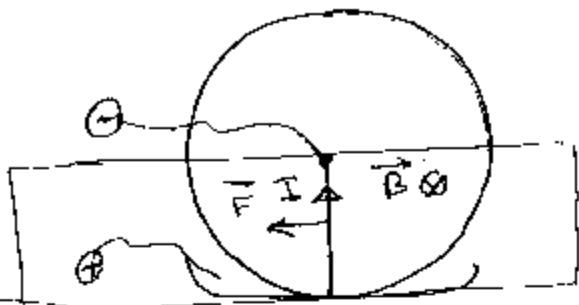
$$= -40 \times 2 \times 10^{-2}$$

$$= -0.8 \text{ N}$$

$$\bar{a} = \frac{F}{m} = \frac{-0.8}{0.1} = -8 \text{ ms}^{-2}$$

$$\bar{a} = -\omega_0^2 \bar{x}$$

المسألة 3



$$F = I L B \sin \theta$$

$$= 20 \cdot 10^{-1} \cdot 1 \cdot 1$$

$$= 2 \text{ N}$$

$$f = \frac{10}{\pi} \text{ Hz} \quad (2)$$

$$P = \Gamma \cdot \omega$$

$$= \frac{1}{2} \cdot F \cdot 2\pi f$$

$$= 10^{-1} \cdot 2 \cdot \pi \cdot \frac{10}{\pi}$$

$$= 2 \text{ W}$$

$$a_c = \omega^2 r$$

$$= (2\pi f)^2 r$$

$$= \left(2\pi \frac{10}{\pi}\right)^2 \times 10^{-1}$$

$$= 40 \text{ m s}^{-2}$$

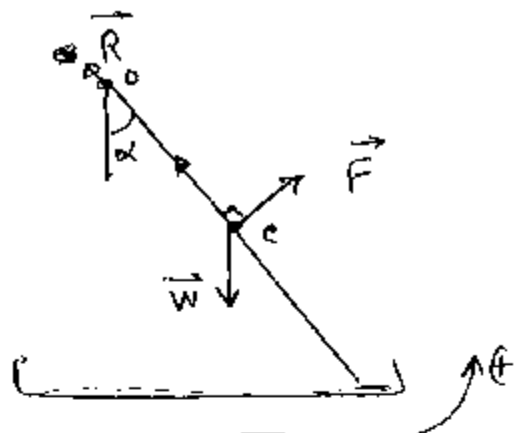
$$v = \omega r$$

$$= 2\pi f r$$

$$= 2\pi \frac{10}{\pi} \cdot 10^{-1}$$

$$= 2 \text{ m s}^{-1}$$

-B



$$\sum \vec{\Gamma}_A = 0$$

$$\vec{\Gamma}_{W/A} + \vec{\Gamma}_{F/A} + \vec{\Gamma}_{R/A} = 0$$

$$-0c \sin \alpha \cdot mg : + 0c \cdot F + 0 = 0$$

المعادلة بسيطة

$$\sin \alpha = \frac{0c \cdot F}{mg \cdot 0c}$$

$$= \frac{I L B S \sin \theta}{mg}$$

$$= \frac{10 \cdot 10^{-2} \cdot 10^{-1}}{2\sqrt{3} \cdot 10^{-1} \cdot 10}$$

$$\sin \alpha = \frac{1}{20\sqrt{3}}$$