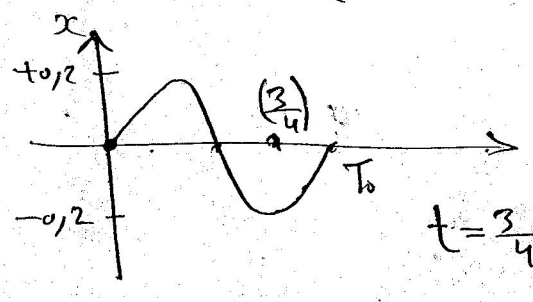
السؤال ①

اختر الاجابة ---

①	3	①
②	2	②
$B' = B$	2	③
I	3	④
400	3	⑤
$\frac{2}{3}E$	3	⑤

السؤال ②

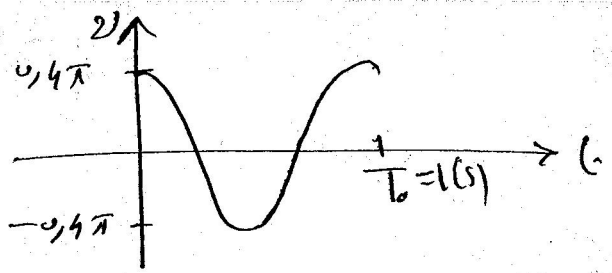
$x = 0{,}2\cos(2\pi t - \frac{\pi}{2})$



①

$t = \frac{3}{4}T_0 = \frac{3}{4}(1)$

$v = -0{,}4\pi\sin(2\pi t - \frac{\pi}{2})$ ②



$v_{max} = \omega_0 X_{max} = 2\pi \times 0{,}2$
$= 0{,}4\pi\ ms^{-1}$

$mg = Kx_0$ ③

$\frac{m}{K} = \frac{x_0}{g} = \frac{1}{\omega_0^2}$ ($\omega_0 = 2\pi$)

$\frac{x_0}{g} = \frac{1}{40} \Rightarrow x_0 = \frac{1}{4}(m)$

$t = \frac{1}{2} \Rightarrow x = 0{,}2\cos(2\pi\frac{1}{2} - \frac{\pi}{2})$ ④
$= 0$

$v = -0{,}4\pi\ ms^{-1}$

$a = -\omega_0^2 x = -40 \times 0 = 0$

$F = ma = 0$

⑤

$E_p = \frac{1}{4}E_K$

$4E_p = E - E_p$

$5E_p = E$

$5 \times \frac{1}{2}Kx^2 = \frac{1}{2}K \cdot 0{,}04$

$x^2 = \frac{0{,}04}{5} = 0{,}008$

$x = \frac{\sqrt{2}}{5}(m)$

$E_K = 4E_p$

$\frac{1}{2}mv^2 = 4 \times \frac{1}{2}Kx^2$

$1 \cdot v^2 = 4 \cdot 40 \cdot \frac{2}{25} \Rightarrow$

$v = \frac{8}{\sqrt{5}}\ ms^{-1}$

$\omega_0 = \sqrt{\frac{K}{m}}$

$2\pi = \sqrt{\frac{K}{1}}$

$K = 40$

⑥

$x_0 = 25\ Cm$

$X_m = 20\ Cm$

$5\ Cm$: المسافة

السؤال الثالث

$B = 4\pi \times 10^{-7} \frac{N}{l} I$ (1

$2 \times 10^{-5} = 4\pi \times 10^{-7} \frac{1000}{1} I$

$I = \frac{1}{20\pi}\ A$

$\vec{B} + \vec{B_H} \Rightarrow \tan\alpha = \frac{B}{B_H}$ (2

$= \frac{2 \times 10^{-5}}{2 \times 10^{-5}} = 1 \Rightarrow \alpha = \frac{\pi}{4}\ rad$

$(\vec{B_H}$ نحو الشمال$)$

$B^2 = B_H^2 + B_\perp^2$ (3

$B = \sqrt{(2 \times 10^{-5})^2 + (2 \times 10^{-5})^2} = \sqrt{2} \cdot 2 \times 10^{-5}\ T$

على نفس $\vec{B_H}$ و $\vec{B}$ (4

$B' = B + B_H = 4 \times 10^{-5}\ T$ نحو $\vec{B_H}$ و $\vec{B}$

$B'' = B - B_H = 0$ متعاكسين

السؤال الرابع

$\vec{B} = \vec{B_1} + \vec{B_2}$

$B = B_1 + B_2 \quad / B = 2\times10^{-7}\frac{I}{d}$

$= \frac{2\times10^{-7}}{0,5}(20+5)$

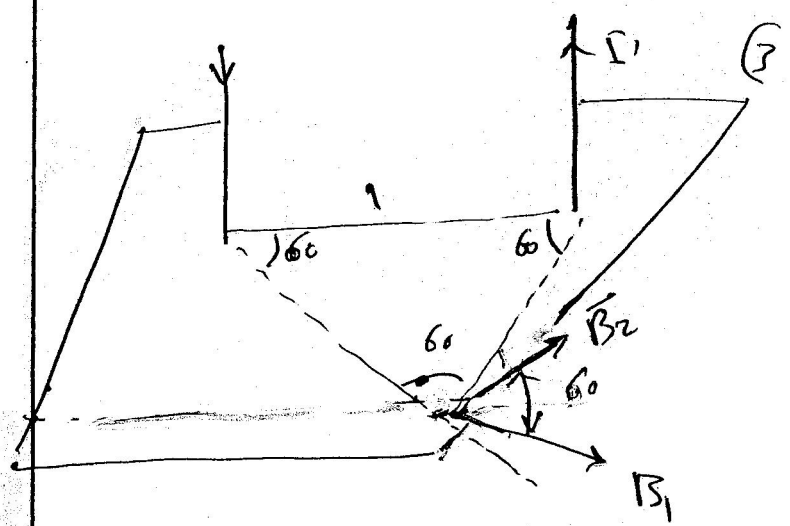
$= 10^{-5}\ T$

٢) تعيين I_1 وفق الشكل

$B_1 = B_2$

$2\times10^{-7}\frac{5}{d} = 2\times10^{-7}\frac{20}{1+d}$

$4d = 1+d \Rightarrow d = \frac{1}{3}\ m$



$\vec{B} = \vec{B_1} + \vec{B_2}$

$B^2 = B_1^2 + B_2^2 + 2B_1B_2\cos(60)$

$B_1 = 2\times10^{-7}\frac{5}{1} = 10^{-6}\ T$

$B_2 = 4\times10^{-6}$

$B^2 = (10^{-6})^2 + (4\times10^{-6})^2 + 2(10^{-6})(4\times10^{-6})\frac{1}{2}$

$B = 10^{-6}\left[1+16+4\right]$

$B = \sqrt{21}\times10^{-6}\ T$

السؤال الخامس

① $T_0 = 2(s) \Rightarrow \omega_0 = \frac{2\pi}{2} = \pi\ rad/s$

② $a = \omega_0^2 x_m \Rightarrow 0,8 = \pi^2 \cdot x_m$

$x_m = 0,08\ m$

③ $\bar{a} = -\omega_0^2 x_m \cos\omega_0 t$

$a = -\pi^2 \cdot 0,08\cos(\pi t)$

$= -0,8\cos\pi t$

④ $x = x_m\cos(\omega_0 t + \varphi)$

$x = 0,08\cos(\pi t + 0)$