

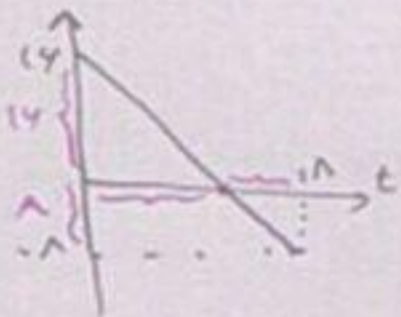
گزینه ۲ - ۱۵۶

$$r = x\vec{i} + y\vec{j}$$

$$= (v_x t + v_{x0}t + \frac{1}{2}at^2)\vec{i} + (v_y t + v_{y0}t + \frac{1}{2}at^2)\vec{j}$$

$$= \frac{1}{4} \times 1 \times 14 \vec{i} + \frac{1}{4} \times 2 \times 14 \vec{j} = 14\vec{i} + 14\vec{j}$$

گزینه ۲ - ۱۵۷



$$\frac{\Delta}{14} = \frac{14-t}{t} \rightarrow t=14$$

$$a_B = \frac{14}{14} = \frac{1}{2}$$

$$v = at + v_0 = \frac{1}{2}t - 20 \quad \Big|_{t=14} = \frac{1}{2}(14) - 20 = -17$$

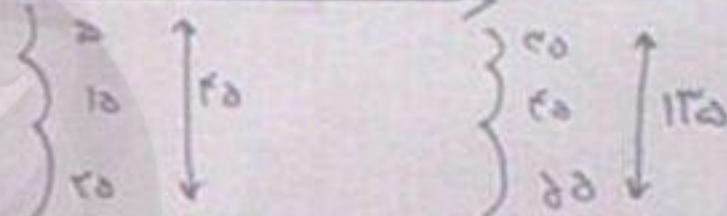
$$x = \frac{-17 - 20}{1} \times 14 = 142 \text{ m}$$

۱۵۸-

$$\Delta y = v_{\text{نشی}} \cdot t$$

$$180 = (20 + 20) t$$

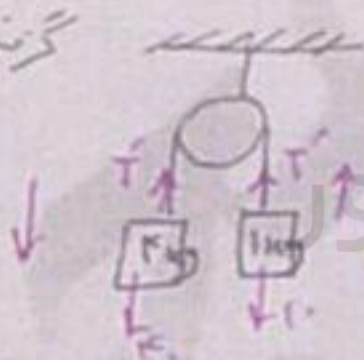
$$t = 4.5$$



$$\frac{\Delta u_A}{\Delta u_B} = \frac{45}{135} = \frac{1}{3}$$

گزینه ۲ - ۱۵۹

۱۶۰-



$$F_1 - 10 = (F + 1) a$$

$$a = 4$$

$$T - 10 = 1 \times 4 \rightarrow T = 14$$

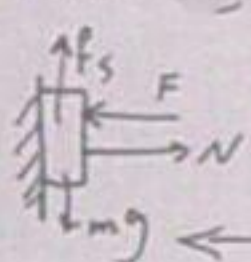
$$T' = 2T = 28 \text{ N}$$

گزینه ۴ - ۱۶۱

$$\Delta u = \frac{v_0^2}{2\mu_k g}$$

$$\frac{\Delta u_A}{\Delta u_B} = \frac{\mu_{kB}}{\mu_{kA}} = \frac{1}{4}$$

گزینه ۳ - ۱۶۲



$$f_1 = f_f$$

$$f = mg$$

$$f = \mu_s N = \mu_s F$$

$$\mu_s F_1 = \mu_k F_2 \Rightarrow F_2 > F_1$$

گزینه ۱ - ۱۶۳

$$\tan \alpha = \frac{v^2}{Rg}$$

$$\frac{7}{1} = \frac{18^2}{R(10)}$$

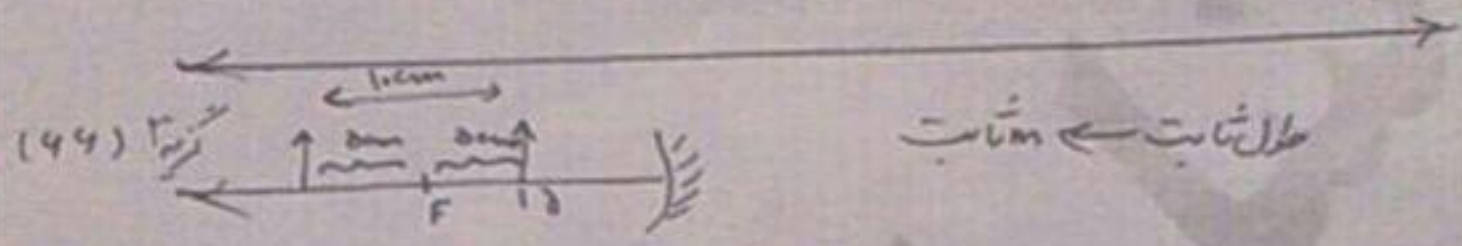
$$\rightarrow R = \frac{18^2 \times 10}{7 \times 1} = 47.14$$

○ مولفیت = ارمداستاد + ۹۹ ارمداستاد ○ تهیه و تنظیم: خانم شایان مجد صفحه: ۲

کل کار در ۲ شاره با انرژی ثابت تبدیل می شود.

۱۴۴)  $w_{mg} = \frac{1}{2} k x^2$   
 $= \frac{1}{2} \times 20 \times 1.0^2 \times (0.12)^2 = 1.44 \text{ J}$

۱۴۵)  $2x \rightarrow 2x'$   
 $2x1.0 + 2x2.0 = 9.0$



۱۴۷)   
 $a = 2.0 + 2.0 + 2.0 = 1.0$   
 $m = \frac{2.0}{1.0} = 2.0$

۱۴۸)   
 $n_1 \sin i = n_2 \sin r$   
 $1 \times \frac{\Delta}{1.0} = \frac{F}{F} \sin r$   
 $\sin r = 0.4$   
 $n = \frac{F}{F}$   
 $\sin i_c = \frac{1}{n}$   
 $i_c < \alpha$  زده بیل

۱۴۹)  $n = 1 - \frac{u + 2v}{k u + 2v} \rightarrow n = 4.18$

۱۷۰)  $PV = nRT$   
 $\frac{P_A V_A}{P_B V_B} = \frac{n_A}{n_B} \rightarrow \frac{\frac{F}{V} \times \frac{V}{F}}{1 \times \frac{V}{F}} = \frac{\chi}{n_B} \rightarrow n_B = \dots$

۱۷۱)  $w = -P \Delta V = -2 \times 1.0^5 (2-9) \times 1.0^{-2} = 1.0$   
 $\Delta U = Q + w = -2 \times 1.0 + 1.0 = 1.0$

۱۷۲)  $0.5 \times 1.0 + 1.0 \times 1.0 = 1.0 m$   
 $2.0 + 1.0 = 1.0 m \Rightarrow m = 4.0 \text{ gr}$

۱۷۳) گزینه ۱

$$\frac{Q_A}{Q_B} = \frac{\frac{kA\Delta\theta}{L}}{\frac{kA\Delta\theta}{L}} = \frac{kA \cdot A_A}{k_B \cdot A_B} = 2$$

۱۷۴) گزینه ۲

$\rho g h = P g h$   
 $(\Delta - 2u) \times 1 = \Delta \cdot (1/2)$   
 $\Delta - 2u = \Delta/2$   
 $u = \Delta/4$

۱۷۵) گزینه ۱

$$P_{\text{برای } P} = \frac{\rho_A v_A + \rho_B v_B}{v_A + v_B} = \frac{10 \times \frac{1}{2} + 4 \times \frac{2}{3}}{1 + \frac{2}{3}} = 10$$

$$P = \rho g h = 10 \times 1 \times \frac{1}{10} = 1$$

۱۷۶) گزینه ۲

مجموع  $m = \Delta K - 200 = 24.4 \text{ g}$   $\rightarrow v = \frac{m}{\rho} = \frac{24}{1.2} = 20$   
 مرسوم  $m = 29 - 200 = 19.9 \text{ g}$   $\rightarrow v = \frac{m}{\rho} = \frac{19}{1.2} = 15.8 \text{ g}$

۱۷۷) گزینه ۱

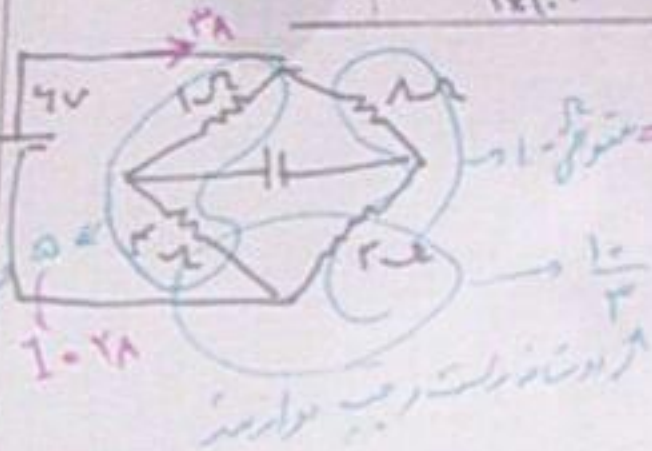
$$f_{\text{one}} \rightarrow n = \frac{1 \times 10^{-9}}{1.4 \times 10^{-19}} = 7.14 \times 10^{10}$$

۱۷۸) گزینه ۲

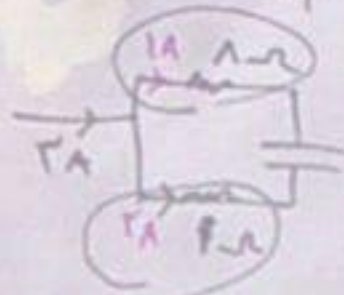
$F = T \sin \alpha$   
 $T_1 \sin \alpha = T_2 \sin \beta$   
 $\frac{T_1}{T_2} = \frac{\sin \beta}{\sin \alpha} = \frac{\sqrt{2}}{1} = \sqrt{2}$

$\tan \alpha = \frac{F}{mg} \rightarrow \begin{cases} F \sin \alpha \tan \alpha = mg \sqrt{2} \\ F \cos \alpha \frac{F}{mg} \end{cases}$   
 $F = T$   
 $\frac{m_1}{m_2} = \frac{1}{\sqrt{2}}$   
 آرزایه هم مورد نیاز

۱۷۹) ۲  $E = \frac{V}{d} = \frac{200}{2 \times 10^{-2}} = 10^4 \text{ V/m}$   $F = Eq = 10^4 \times 2 \times 10^{-19} = 2 \times 10^{-15}$



$$I_T = \frac{\mathcal{E}}{R_T + r} = \frac{4}{\frac{1}{2} + 2} = 2 \text{ A}$$



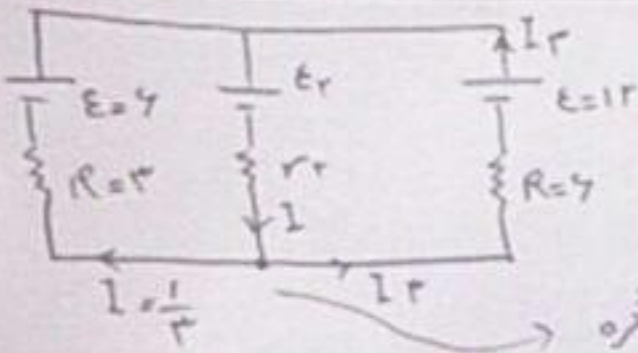
$\mathcal{E}_{\text{تولید}} = 2 \times 1 = 2$   
 $\rightarrow \Delta U_{\text{کل}} = 2$

$\mathcal{E}_{\text{تولید}} = 1 \times 1 = 1$

$u = \frac{1}{2} C V^2 = 9$

۱۸۰) ۴

۱۸۱) گزینه ۱



$$V = E - rI = 4 - 2\left(\frac{1}{r}\right) = 0$$

$$V = E_r - rI_r$$

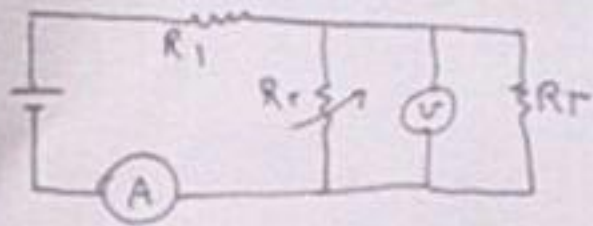
$$0 = 12 - 4I_r \rightarrow I_r = \frac{3}{4} A$$

$$I = \frac{3}{4} + \frac{1}{r} = \frac{9}{4} = \frac{r}{r}$$

$$E_r + rI = V$$

$$E_r + r\left(\frac{9}{4}\right) = 0 \rightarrow E_r = 2V$$

$$P = EI - rI^2 = 0 \cdot 4\left(\frac{9}{4}\right) + 2\left(\frac{9}{4}\right)^2 = 2 + \frac{9}{2} = 4.5 W$$



$$R_T \Rightarrow I_T = \frac{E}{R_T + r}$$

$$V_T = E - rI_T$$

$$V_1 = R_1 I_T$$

$$V_T = V_1 + V_r$$

$$F = 2 \times 10^{-2} \frac{N}{m} \quad \frac{L_1 I_T L_2}{r} = 2 \times 10^{-2}$$

۱۸۳)

$$F = 2 \times 10^{-2} \rightarrow 17 \times 10^{-14} = 17 \times 10^{-14} \times 2 \times 10^{-2} \quad V \rightarrow V = 4 \times 10^{-2}$$

۱۸۴)

$$I = 0 \quad L = \frac{\mu_0 N^2 A k}{l} \rightarrow \frac{(2000)^2 \times 5 \times 10^{-7} \times 12 / 5}{5 \times 10^{-2}} = 0.1$$

۱۸۵)

$$\mathcal{E}_L = -L \frac{\Delta I}{\Delta t} \rightarrow 4 = -2 \frac{\Delta I}{\Delta t} \rightarrow \frac{\Delta I}{\Delta t} = -2$$

۱۸۶)

$$v = \pm \sqrt{A^2 \omega^2 - u^2} \quad \omega = \sqrt{\frac{k}{m}} = 2$$

۱۸۷)

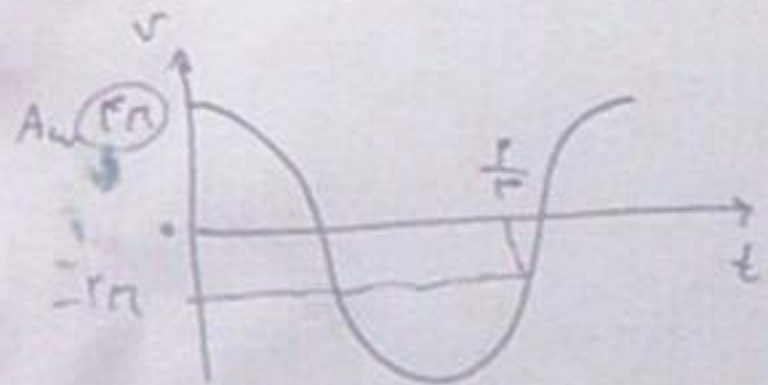
$$t = \frac{2}{f} T \rightarrow T = 1s \quad \omega = \frac{2\pi}{T} = 2\pi$$

۱۸۸)

$$a = A\omega \quad \omega = 2\pi \times 2\pi = 4\pi^2$$

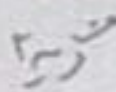
$$a = f\pi^2 \quad \frac{a_m}{a} = \frac{1}{2}$$

$$\Delta T = \frac{T}{n} = \frac{1}{12} \approx 0.083s$$



$$189) \quad \Delta \phi = k \Delta x \\ = \frac{2\pi}{\lambda} (x_2 - x_1) = \frac{2\pi}{\lambda} (0.3) = 3\pi \text{ در آنتر}$$

$$190) \quad u = \frac{1}{2} \sin\left(\frac{2\pi}{\lambda} x - \frac{2\pi}{T} t\right) \quad v = \frac{1}{d} \sqrt{\frac{F}{\mu}} \\ \frac{1.9}{\text{cm}} \times 1.0 = \lambda \dots \quad \frac{1.0}{\text{s}} = \frac{1}{T} \dots \rightarrow F = 9.7 \\ \left(k = \frac{2\pi}{\lambda} = \frac{\omega}{v}\right) \rightarrow v = \frac{\omega}{k} = \frac{1.0}{1/1} = 1.$$

191) 

$$192) \quad \Delta B = 1. \text{ و } \frac{I_2}{I_1} \\ 1/2 B - B = 1. \text{ و } \left(\frac{A_2}{A_1}\right)^2 \\ 1/2 B = 2. \text{ و } \frac{A_2}{A_1} = 2. \text{ و } r^2 = 2. \text{ و } r = \sqrt{2} = 1.414 \\ B = F. \rightarrow B_2 = \delta$$

$$193) \quad \text{Diagram of a string fixed at both ends, showing the second harmonic mode with two antinodes and three nodes. The length of the string is labeled as L. The distance between two adjacent nodes is labeled as \frac{L}{2}.$$

$$194) \quad \frac{f_0}{f_s} = \frac{v}{v - \frac{v}{n}} \\ \Delta F = \frac{n}{n-1} f_s - f_s = \left(\frac{n}{n-1} - 1\right) f_s = \frac{f_s}{n-1} \\ \Delta F' = \frac{f_s}{n+1} \quad \frac{\Delta F'}{\Delta F} = \frac{n+1}{n-1}$$

$$194) \quad \Delta u = (2n-1) \frac{\lambda}{2} \quad \Delta u = 2n \frac{\lambda}{2} \\ 1.8 \times 10^{-9} = \frac{\lambda}{2} \rightarrow \frac{\lambda}{2} = 2 \times 10^{-9} \quad = f (2 \times 10^{-9}) = 12.0 \text{ nm}$$

$$195) \quad \frac{kq_1q_2}{r} = \frac{ke^2}{r}$$

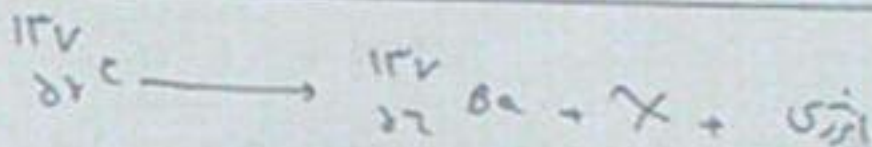
$$196) \quad \omega = hf = \frac{hc}{\lambda} = \frac{2.5 \times 10^{-18} \times 3 \times 10^8}{1.0 \times 10^{-9}} = 7.5 \text{ eV} \\ \frac{hc}{\lambda} = 7.5 \text{ eV} \quad \frac{2.5 \times 10^{-18} \times 3 \times 10^8}{\lambda} = 7.5 \rightarrow \lambda = 1.0 \text{ nm}$$

(۱۹۹)

$$m_3 \frac{m_0}{r} \frac{E}{T} = \frac{m_0}{r} \frac{32}{8} = \frac{m_0}{r} \frac{4}{1} = \frac{m_0}{r} \frac{14}{14} = 7,25 \text{ اے مینٹ}$$

$$\Rightarrow 93,75 \text{ مے سکن}$$

(۲۰۰)



$$1u \longrightarrow 931.5 \text{ MeV}$$

$$\therefore 1u \longrightarrow 931 \text{ MeV}$$

$$= 931 \times 1.6 \times 10^{-19}$$

$$= 1.49 \times 10^{-16} \text{ J}$$

سایت کنکور