

۹۹,۵,۲۰ - ۵۵ (مقیه) جان -

۱۰۲ کتاب درسی

12V - 12V

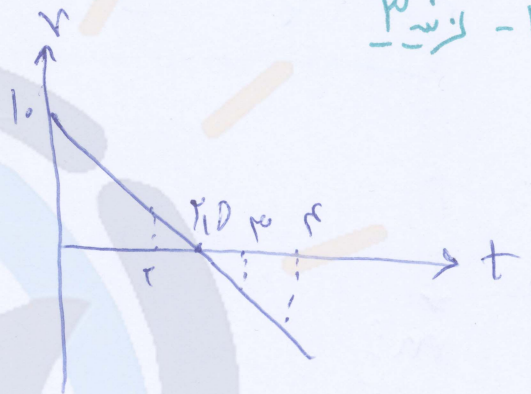
$$\Delta x = \frac{1}{2} a t^2 (v_{n-1}) + v_0 t$$

$$0 = -Y(\tau - 1) + V_a \rightarrow V_a = l_a$$

$V = -Kt + I_0$

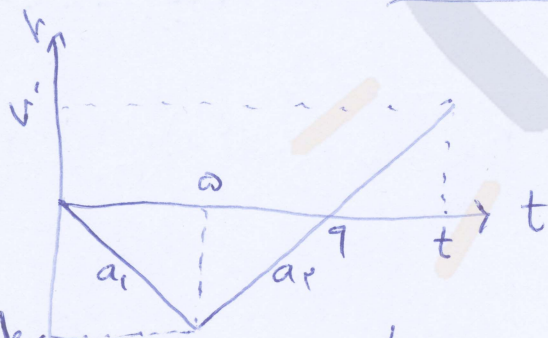
At $t = 0$, $V = I_0$

At $t = T$, $V = -I_0$



$$d = \left| \frac{10 \times 1}{1} \right| + \left| \frac{10 \times -7}{1} \right| = 10 + 70 = 80$$

۱۵۸ - ترم ۱



$$\Delta x =$$

$$\frac{-1 \times q}{r} + \frac{v'(t-q)}{r} = 0 \rightarrow v' = \frac{q}{t-q}$$

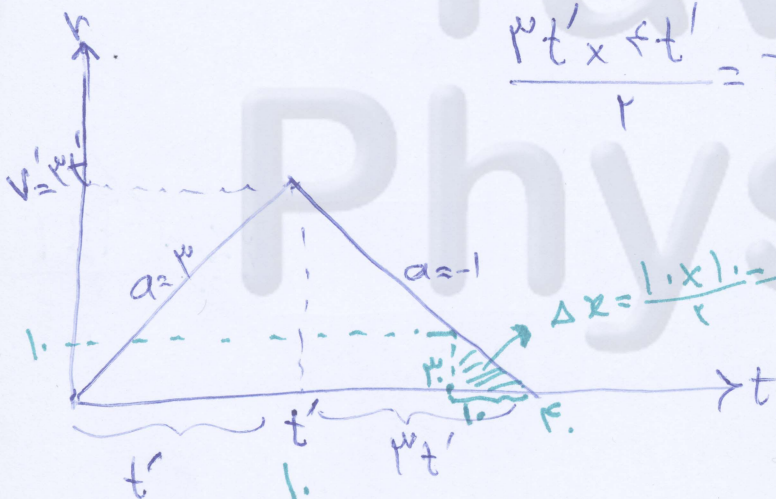
$$t_{ga}: \frac{I_v}{r} = \frac{V'}{t-g} \rightarrow \frac{I_v}{r} = \frac{q_v}{(t-g)^r} \rightarrow t = 10$$

۱۵۹ گزیده ۲ در $t=1$ شب هر دو نفر با یکدیگر ملاقات.

$\begin{array}{c} \nearrow 12 \\ \searrow 1 \end{array}$

۱۶۰ - ثریفہ ۴

$$\frac{v t' \times t'}{r} = 7.1 \rightarrow t' = 1.0$$



$$\xrightarrow{t=2} \left[\Delta x = 7 \dots - 0 \dots = 00. \right]$$

$$\Delta x = \frac{1 \times 1}{r} = 0.$$

$$K = \frac{1}{2} m v'^2 \rightarrow 24 \cdot 2 = \frac{1}{2} \times \frac{1}{2} v'^2 \rightarrow v = 22$$

۱۷۱ - نکته ۲

$$v = \frac{v + v'}{2} = \frac{22 + 12}{2} = 17$$

← نکته: قبل از $v' = 12$

$$\Sigma F = ma$$

۱۷۲ - نکته ۳

$$k\Delta L - mg = ma$$

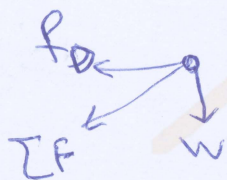
$$k \times \frac{12}{100} = 2(1 + 2) \rightarrow k = 200$$

$$\mu_k = 0.15$$

$$k\Delta L - \mu_k mg = ma \rightarrow 200 \times \frac{7}{100} - 0.15 \times 20 = 2$$

$$\Sigma F = ma = \sqrt{f_D^2 + w^2}$$

$$173 - \text{نکته ۳}$$



$$1.8 \times \frac{70}{7} = \sqrt{f_D^2 + (4.9)^2} \rightarrow f_D = \sqrt{(1.8)^2 \left(\frac{100}{7}\right)^2 - \left(\frac{12}{7}\right)^2}$$

$$\rightarrow f_D = 1.8 \times \frac{10}{12} = 1.5$$

$$174 - \text{نکته ۲}$$

$$T - 20 = 2 \rightarrow T = 22$$

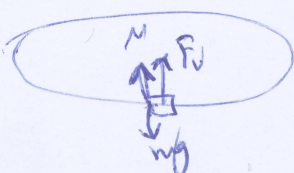
$$2T - 20 = 2a \rightarrow a = 1 \rightarrow \frac{a_2}{a_1} = \frac{1}{2} = 0.5$$

$$\frac{k_A}{k_B} = \frac{\frac{P_A}{\gamma m_A}}{\frac{P_B}{\gamma m_B}} = \left(\frac{P_A}{P_B}\right)^2 \times \left(\frac{m_B}{m_A}\right) = \left(\frac{1}{2}\right)^2 \times \frac{8}{1} = \frac{1}{4}$$

$$175 - \text{نکته ۲}$$

$$N = mg = 100 \times 10 = 1000$$

$$177 - \text{نکته ۲}$$



$$F_t = \sqrt{F_v^2 + N^2} \Rightarrow 1000 = \sqrt{F_v^2 + (1000)^2} \rightarrow F_v = 1000$$

$$E = u + k \rightarrow \frac{1}{2} k A^2 = u + \frac{1}{2} m v^2$$

۱۷۷ نکته ۱

$$\frac{1}{2} \times 0.001 \times (1 \times 10^8)^2 = 1.2 + \frac{1}{2} \times 1 \times v^2 \rightarrow v^2 = 1.4 \rightarrow v = \frac{1}{\sqrt{10}} \frac{m}{s} = 0.316 \frac{m}{s}$$

$$T = 2\pi \sqrt{\frac{m}{k}} \rightarrow \frac{1}{2} T = 2\pi \sqrt{\frac{m}{k}} \Rightarrow k = \frac{4\pi^2 m}{T^2} = \frac{4\pi^2 m}{(2\pi)^2}$$

۱۷۸ نکته ۱

$$\frac{T_2}{T_1} = \frac{1.9}{1.1} = \sqrt{\frac{m-1.9}{m}} \rightarrow m = 1$$

۱۷۹ نکته ۳

$$T = 2\pi \sqrt{\frac{L}{g}} = \frac{t}{n} \rightarrow \begin{cases} T_1 = \frac{v_1}{f_1} = \frac{1}{5} \\ T_2 = \frac{v_2}{f_2} = \frac{1}{5} \end{cases}$$

$$\frac{T_2}{T_1} = \sqrt{\frac{L_2}{L_1}} \rightarrow \frac{L_2}{L_1} = \left(\frac{1}{9}\right)^2 = \frac{1}{81} \rightarrow L_2 = 14 \text{ cm}$$

$$\beta_1 - \beta_2 = 1. \log\left(\frac{dr}{dt}\right)^2 \rightarrow 1.8 = 2. \log \frac{dr}{dt}$$

۱۷۰ نکته ۲

$$\rightarrow \log \frac{dr}{dt} = \frac{1.8}{2} = 0.9 = 3 \times 0.3 = 3 \times \log r = \log r^3 = \log 8 \rightarrow \frac{dr}{dt} = 8$$

۱۷۱ نکته ۲

$$\frac{3\lambda}{2} = 12. \rightarrow \lambda = 8 \text{ cm}$$

$$\lambda = vT \rightarrow \frac{8}{10} = 1. T \rightarrow T = \frac{1}{10}$$

$$\begin{cases} t_1 = 1.1 = \frac{T}{\lambda} \\ t_2 = 1.0 = \frac{T}{\lambda} \end{cases} \Rightarrow \Delta t = \frac{T}{\lambda} \Rightarrow 2A = 2 \times 3 = 6 \text{ cm}$$

$$S = 2\alpha$$

۱۷۳ نکته ۴

$$\frac{\lambda_r}{\lambda_1} = \frac{v_r}{v_1} = \frac{n_1}{n_r} = \frac{\sin \theta_r}{\sin \theta_1} = \frac{\sin \theta}{\sin i} = \sqrt{2}$$

۱۷۳ لرنه ۱

$$f_n = \frac{nv}{\lambda_L}, \quad f_{n+1} = \frac{(n+1)v}{\lambda_L} = f_n + f_1$$

۱۷۴ لرنه ۲

$$\omega \dots \rightarrow v\omega + f_1 \rightarrow f_1 = 120$$

$$f_{n+1} = v\omega + 120 = 17v\omega_{Hz}$$

$$\frac{1}{\lambda} = R \left(\frac{1}{n_1^2} - \frac{1}{n_2^2} \right) = \frac{11}{1.00} \left(\frac{1}{16} - \frac{1}{81} \right) \rightarrow \lambda = 397$$

۱۷۵ لرنه ۴

$$K_{max} = \frac{hc}{\lambda} - \phi \rightarrow \begin{cases} K_A = \frac{12.10 \times 12.10}{10.10} - 1.0 = 1.0 \\ K_B = \text{down} - 1.0 = 0 \end{cases}$$

۱۷۶ لرنه ۱

$$\frac{K_A}{K_B} = \frac{1.0}{0} = \infty, v \rightarrow \text{speed}$$

۱۷۷ لرنه ۳

$$\frac{E_r}{E_1} = \frac{E_1 - 1.2x}{E_1} = \left(\frac{v_1}{v_r} \right)^2 = \left(\frac{1}{\sqrt{2}} \right)^2 = \frac{1}{2} \rightarrow E_1 = 1.1x$$

$$E_1 = 1.1x = \frac{kq}{(1.1)^2} \rightarrow kq = 1.1 \rightarrow E_{(1.1m)} = \frac{kq}{1^2} = 1.1$$

۱۷۸ لرنه ۴

$$F_{12} = F_{21} \rightarrow \frac{q_1 q_2}{(x+r)^2} = \frac{q_2}{x^2} \rightarrow \frac{x}{\sqrt{2}} = 2$$

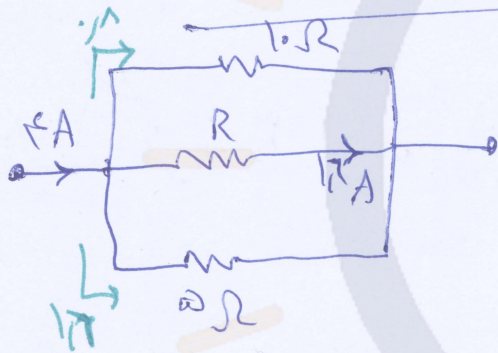
$$F_{21} = F_{11} \rightarrow \frac{q_1}{r^2} = \frac{q_2}{(x+r)^2} \rightarrow \frac{q_2}{q_1} = \left(\frac{x+r}{r} \right)^2 = 9$$

تفاوت بین q_1 و q_2 در 9 است.

$$\Delta U = -q E d \cos \theta = \omega \times 1. \times 1. \times \frac{3}{100} \times \cos 0 = 0.18 \quad \text{لرنه ۱} \quad ۱۷۹$$

$$U_2 - U_1 = \frac{1}{2c} (q_2^2 - q_1^2) \rightarrow -21.8 = \frac{1}{2 \times 12} (19 - 7)^2 - q_1^2 \quad \text{لرنه ۱} \quad ۱۸۰$$

$$\rightarrow q = 7.0, \quad v = \frac{q}{c} = \frac{7}{12} = 0.58$$



$$4 - 1.7 = 2.3 \quad \begin{matrix} \rightarrow 2.1 \\ \rightarrow 1.7 \end{matrix}$$

$$\text{لرنه ۳} \quad ۱۸۱$$

$$\Rightarrow R = 0 \rightarrow u = R I^2 t = 0 \times (1.7)^2 \times 20 \times 10^{-3}$$

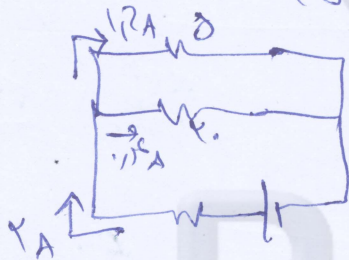
$$u = 142.0 \text{ J} = 141.2 \text{ KJ}$$

$$I = \frac{\epsilon_1 - \epsilon_2}{\sum R} = \frac{12 - 4}{1 + 1 + 1 + 7} = 1.1 \quad \text{لرنه ۴} \quad ۱۸۲$$

$$V = IR + \epsilon_2 = (1.1 \times 7) + 4 = 7.7 \text{ V}$$

$$\text{لرنه ۳} \quad I = \frac{\epsilon}{\sum R} = \frac{11}{0.4 + 1} = 1.1 \rightarrow V = IR = 1.1 \times 0.4$$

$$\text{لرنه ۳} \quad R' = \frac{1 \times 0.4}{1 + 0.4} = 0.286 \rightarrow I' = \frac{11}{0.286 + 1} = 2$$

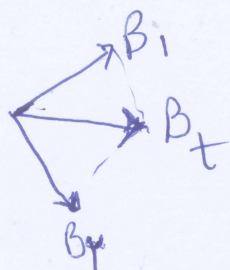


$$V' = 0.4 \times 1.7$$

$$V' - V = (0.4 \times 1.7) - (0.4 \times 1.1) = -0.24 \text{ V} = -1 \quad \text{لرنه ۴} \quad ۱۸۴$$

$$\text{لرنه ۴} \quad R' = \frac{1}{c} R = \frac{1}{c} \times 2 = \frac{2}{c}$$

$$\text{لرنه ۴} \quad \frac{R''}{R'} = \left(\frac{L_2}{L_1} \right)^2 = 4 = 12 \rightarrow R'' = 12 \times \frac{2}{c} = 24$$



۱۸۵ گزیده ۱

۱۸۶ گزیده ۲

$$\phi = BA \cos \theta = (2 \times 10^{-3}) \times (2 \times 10^{-2}) \cos 60^\circ = 2 \times 10^{-5} \text{ Wb}$$

$$I = I_{\max} \sin \omega t = 0.02 \sin (100\pi \times \frac{1}{100}) = 0.02$$

$$\frac{\partial T}{\partial f} = \frac{1}{100} \rightarrow T = \frac{1}{100} \rightarrow \omega = \frac{2\pi}{T} = 100\pi$$

۱۸۹ گزیده ۱

$$mgh_1 + \frac{1}{2}mv_1^2 = \frac{1}{2}mv_2^2 + mgh_2$$

$$1.0h_1 + \frac{1}{2} \times 17^2 = \frac{1}{2} \times 20^2 + 1.0 \times 17 \rightarrow h_1 = 1.48$$

۱۹۰ گزیده ۱

$$\eta = \frac{P_{\text{out}}}{P_{\text{in}}} \times 100 = \frac{(1000)(1.0)(2.5)}{10000} \times 100 = 2.5\%$$

۱۹۱ گزیده ۲

$$p \propto \frac{1}{V^4}$$

→ اگر دما و طول موج ثابت باشد، پس $p \propto \frac{1}{V^4}$

۱۹۲ گزیده ۴

$$V = \frac{M}{\rho} \rightarrow \begin{cases} \text{for } V = \frac{137}{1312} = 1.05 \text{ cm}^3 \rightarrow V = Ah \rightarrow h = 2 \text{ cm Hg} \\ \text{for } V = \frac{137}{1} \rightarrow V = Ah \rightarrow h = 2 \text{ cm Hg} \end{cases}$$

۱۹۳ گزیده ۴

$$p = 2 + 2 + 1.05 = 5.05 \text{ cm Hg} = 1.05 \times 137 = 143.85 \text{ Pa}$$

194 سکڑنے ۳

$$P_1 h_1 = P_2 h_2 \xrightarrow{\text{روغن}} 1 \times 71 = 13.7 h' \rightarrow h' = 5 \text{ cm Hg}$$

$$\xrightarrow{-1} 1 \times 71 = 13.7 h \rightarrow h = 5 \text{ cm Hg}$$

$$P_{\text{gas}} + P_{\text{روغن}} = P_{\text{آب}} + P_0 \rightarrow P_{\text{روغن}} = P_{\text{gas}} - P_0 = P_{\text{آب}} - P_0 = 0 - 1 = 1 \text{ cm Hg}$$

= 10 mm Hg

195 سکڑنے ۴

$$\frac{\Delta V_A}{\Delta V_B} = \frac{V_A}{V_B} \times \frac{\rho_A}{\rho_B} \times \frac{\Delta \theta_A}{\Delta \theta_B} = \frac{1}{2} \times \frac{1}{2} \times 2 = \frac{1}{4}$$

196 سکڑنے ۴

$$m \Delta \theta = m' L_f \rightarrow m \times 80 \dots \times 0 = m' \times 332 \dots$$

$$\rightarrow m' = \frac{8}{\lambda} m$$

$$m + m' = 80 \rightarrow m + \frac{8}{\lambda} m = 80 \rightarrow m = 32 \text{ g}$$

197 سکڑنے ۲

$$\frac{P_1}{T} = \frac{P_2}{T} \rightarrow \frac{V_1}{V_2} = \frac{V_2}{V_2} \rightarrow V_2 = \frac{9}{\lambda} V_1$$

$$V_2' = \frac{1}{10} V_2 = \frac{1}{10} \times \frac{9}{\lambda} V_1 = \frac{9}{10 \lambda} V_1$$

$$V_2 P_2 = V_2' P_2' \rightarrow \frac{9}{\lambda} V_1 \times 1.5 = \frac{9}{10 \lambda} V_1 \times P_2' \rightarrow P_2' = 15 \times 1.5$$

198 سکڑنے ۳

1) B/A سہولت و کاٹل جسم و دھا

$$P_B V_B = P_C V_C$$

2) C/B سہولت و دھا

$$1.5 \times 2 = P_C \times 1 \rightarrow P_C = 3$$

سکڑنے ۳

$$W_{AB} = 0 \quad \text{نویس}$$

۱۹۹ ^۲نرینه

$$Q_{be} = \frac{\delta}{\gamma} n R \Delta T = \frac{\delta}{\gamma} \times 1 \times 1 \times (750 - 250) = 6000 \text{ J}$$

$$\frac{P_1 V_1}{T_1} = \frac{P_2 V_2}{T_2} \rightarrow \frac{2 \times 10^5 \times V_1}{300} = \frac{2.9 \times 10^5 \times V_2}{290} \rightarrow V_2 = 0.17$$

$$P_2 V_2 = n R T_2 \rightarrow 2.9 \times 10^5 \times 0.17 \times 10^{-3} = n \times 1 \times 290$$

$$\rightarrow n = 210 \text{ mol} \quad n = \frac{m}{M} \rightarrow 210 = \frac{m}{M} \rightarrow m = 1.9$$

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