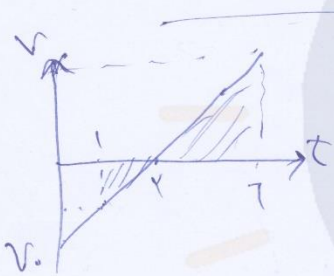


فیزیک کنکور ۹۹ تجربی (صبر) - ۳۰ تا ۳۷ دقیقه زمان - ۹۹، ۵، ۳۱

① از بند ۱  
 $\Delta x = 7 \text{ cm} \rightarrow \Delta x = \pm 0.2 \text{ cm} \approx \pm 1 \text{ cm} \rightarrow 3, 7 \pm 1 \text{ cm}$

② از بند ۲  
 $x_1 = x_2 \quad \begin{cases} a_1 = a \\ a_2 = \frac{1}{12} a \end{cases} \quad \begin{matrix} t_1 = t = ? \\ t_2 = t + 7 \end{matrix} \quad v_0 = 0$

$\frac{1}{2} a t^2 = \frac{1}{2} \left( \frac{a}{12} \right) (t+7)^2 \rightarrow t = \frac{7}{11} (t+7) \rightarrow t = 7$

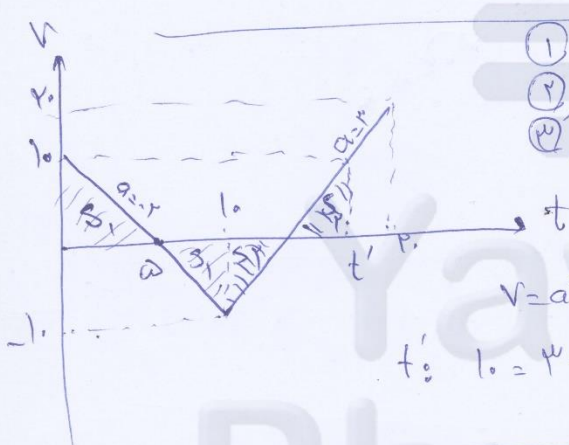


$\bar{v} = \frac{\Delta x}{\Delta t} \rightarrow \bar{v} = \frac{x_2 - x_1}{7-1} \rightarrow x_2 - x_1 = 10$

$v = at + v_0 \xrightarrow{t=7} 0 = 7a + v_0 \rightarrow v_0 = -7a$  (1)  
 $\begin{cases} v_1 = a + v_0 \\ v_2 = \frac{a}{12} + v_0 \end{cases} \rightarrow v_0 + 2v_2 = 7$  (2)

$\Delta x = \frac{v_1 + v_2}{2} \Delta t \rightarrow 10 = \frac{v_1 + v_2}{2} \times 7 \rightarrow v_1 + v_2 = 7$

①, ②  $a = 1, v_0 = -7 \rightarrow \begin{cases} v_1 = 1 - 7 = -6 \\ v_2 = \frac{1}{12} - 7 = -\frac{83}{12} \end{cases} \rightarrow d = |s_1| + |s_2|$   
 $d = \left| \frac{1 \times 7}{2} \right| + \left| \frac{1 \times 7}{2} \right| = 7$



- ①  $t = 1 \text{ s}$
- ②  $t = 2 \text{ s}$
- ③  $t = ? \rightarrow \frac{0}{a}$

$S = \Delta v$

$v = at + v_0$

$t_0: 10 = 1t - 10 \rightarrow t = \frac{20}{1} \rightarrow t' = 10 + \frac{20}{1} = \frac{30}{1}$

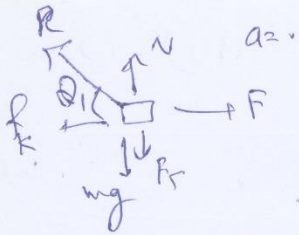
$\Sigma F = ma \rightarrow F - m_k mg = ma \rightarrow 0 \text{ cm} - 0 \text{ cm} = 1 \text{ cm} \rightarrow a_1 = a_2 = 1 \text{ cm}$

$v = at + v_0 = 1 \times 1 + 0 = 1$

$\begin{matrix} \square & a_1 = 1 & \square & a_2 = 1 \\ v_1 = 1 & \text{cm} & v_2 = 1 & \text{cm} \end{matrix}$

$0 = -0t + 1 \rightarrow t = 1 \text{ s}$

$\Delta x = \frac{v_1 + v_2}{2} \Delta t \rightarrow \begin{cases} \Delta x_1 = \frac{0+1}{2} \times 1 = \frac{1}{2} \\ \Delta x_2 = \frac{0+1}{2} \times 1 = \frac{1}{2} \end{cases} \rightarrow d = 1 + 1 = 2 \text{ cm}$

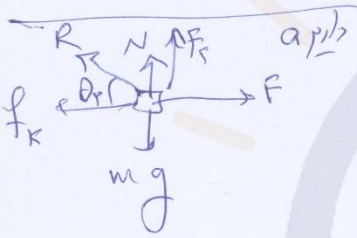


$$N = f_k + mg = 1 + 1 = 2$$

1.  $\theta_1 = 45^\circ$

$$f_k = \mu N = 1 \cdot 2 = 2 \quad \tan \theta_1 = \frac{N}{f_k} = \frac{2}{2} = 1$$

$$f_k = \mu N \rightarrow 1 = \mu \times 2 \rightarrow \mu = \frac{1}{2}$$



$$N = mg - f_k = 1 - 1 = 0$$

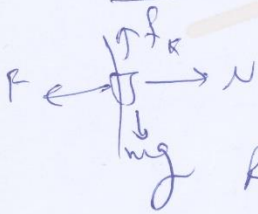
$$\tan \theta_2 = \frac{N}{f_k} = \frac{0}{1} = 0$$

$$f_k = \mu N = \frac{1}{2} \times 2 = 1$$

$$\theta_1 = \theta_2 < 90^\circ \rightarrow \perp \text{ is not}$$

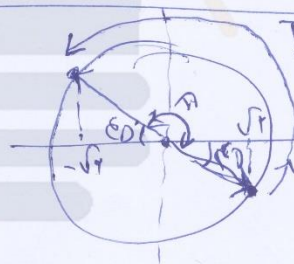
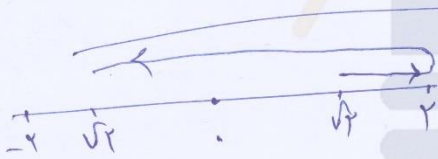
$$\Sigma F_x = ma \rightarrow F = N = 2$$

2.  $\theta_1 = 45^\circ$



$$f_k - mg = ma \rightarrow f_k = 2(1+1) = 4$$

$$R = \sqrt{N^2 + f_k^2} = \sqrt{2^2 + 4^2} = \sqrt{4 + 16} = \sqrt{20} = 2\sqrt{5}$$



$$T_1 = 2\pi r$$

$$T = \frac{1}{f} = 2$$

$$\Delta t = \frac{T}{P} = \frac{2}{1} = 2$$

$$v = \frac{\Delta x}{\Delta t} = \frac{2\sqrt{r}}{2} = \sqrt{r}$$

$$E = U + K \rightarrow \frac{1}{2} \lambda v^2 = \frac{1}{2} \lambda v^2 + \frac{1}{2} m v^2 \rightarrow v = \lambda v \rightarrow v = \lambda v$$

3.  $\lambda = 2$

$$\beta_2 - \beta_1 = 10 \log \frac{I_2}{I_1} = 10 \log 10^3 = 30 \text{ dB}$$

4.  $\lambda = 2$

$$\lambda = 2 \rightarrow \lambda = f \cdot T \rightarrow T = \frac{\lambda}{v} = \frac{2}{1} = 2 \text{ s}$$

5.  $\lambda = 2$



$$n_1 \sin \theta_1 = n_2 \sin \theta_2 \rightarrow 1 \times \sin \theta_1 = \frac{c}{v} \sin \theta_2 \rightarrow \theta_2 = 34^\circ \quad ? \quad 214$$

$$\frac{c}{v} \sin 34^\circ = \frac{1}{v} \sin \theta_2 \rightarrow \theta_2 = 40^\circ$$

$$x_{AC} = \frac{q}{Cv} = \frac{q \times 1.7}{1} \text{ m}, \quad v_{AC} = \frac{c}{n_2} = \frac{3 \times 10^8}{1.7} = \frac{q}{1.7} \times 10^8 \text{ m/s}$$

$$x_{CB} = \frac{q}{Cv} = \frac{q \sqrt{2} \times 1.7}{1} \text{ m}, \quad v_{CB} = \frac{c}{n_2} = \frac{3 \times 10^8}{1.7 \sqrt{2}} \text{ m/s}$$

$$t_{AC} = \frac{x_{AC}}{v_{AC}} = \frac{\frac{q}{1.7} \times 1.7}{\frac{q}{1.7} \times 10^8} = 1.7 \text{ ns}$$

$$t_{BC} = \frac{x_{CB}}{v_{CB}} = \frac{q \sqrt{2} \times 1.7}{\frac{q}{1.7 \sqrt{2}} \times 10^8} = 1.7 \text{ ns}$$

$$\Rightarrow t = t_{AC} + t_{BC} = 1.7 + 1.7 = 3.4 \text{ ns}$$

در این مسئله ما باید استن

218 از این متن کتاب درسی

$$\frac{1}{\lambda} = R \left( \frac{1}{m^2} - \frac{1}{n^2} \right) \rightarrow \frac{1}{1.2} = \frac{1}{1.7} \left( \frac{1}{q} - \frac{1}{nr} \right) \rightarrow nr = ? \quad 219$$

$$E = \frac{nhc}{\lambda} \rightarrow 1.7 \times 10^8 \times 6.6 \times 10^{-34} = \frac{1.7 \times 10^8 \times 6.6 \times 10^{-34}}{\lambda} \times 1.7$$

$$\rightarrow \lambda = 1.1 \text{ m} \rightarrow \text{از این متن}$$

$$E = \left( \frac{\Delta v}{d} \right) \mu = \left( \frac{\Delta v}{d} \right) \lambda \rightarrow \frac{0 - (-1.0)}{1 \text{ cm}} = \frac{0 - v_A}{1 \text{ cm}} \rightarrow v_A = -1 \text{ cm} \quad 221$$

$$q_1 \quad q_2 = -q_1 \quad E = \frac{kq}{r^2} \rightarrow E_p = 19E$$

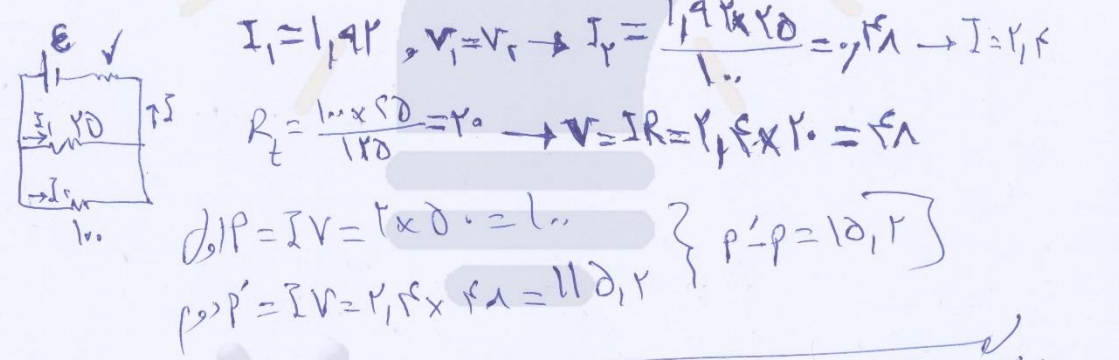
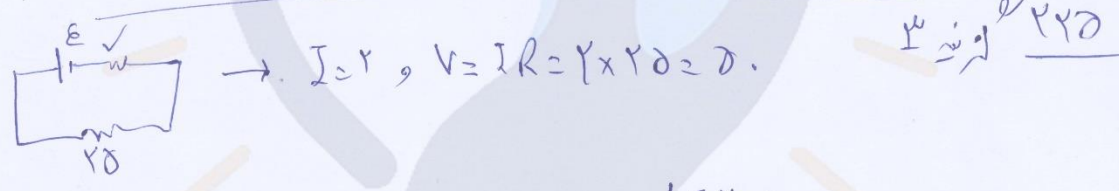
222 از این متن

$\epsilon = \frac{Q}{C} \rightarrow V = \frac{Q}{C} \rightarrow C = \epsilon_0 \frac{A}{d} \rightarrow \frac{C_1}{C_2} = \frac{d_1}{d_2} = \frac{1}{2}$

$E = \frac{V}{d} \rightarrow \frac{E_1}{E_2} = \frac{d_1}{d_2} = \frac{1}{2} \quad Q = CV \rightarrow \frac{Q_1}{Q_2} = \frac{C_1}{C_2} = \frac{1}{2}$

$v = 3 \text{ km} \quad I = \frac{q}{t} = \frac{ne}{t}$

$t = 2.5 \times 10^{-8} \text{ s}$   
 $e = 1.6 \times 10^{-19} \text{ C}$   
 $\frac{7}{(1.6 \times 10^{-19})^2} = \frac{n \times 1.6 \times 10^{-19}}{100} \rightarrow n = 1.1 \times 10^{21}$



$R_{\text{total}} = 2 \rightarrow R_{\text{total}} = 2 + 15 + 1 + 2 = 20$

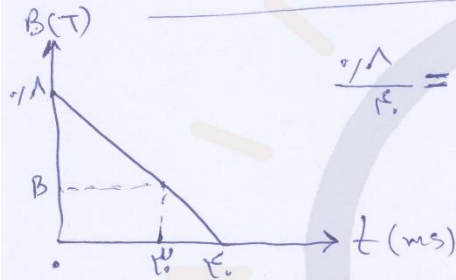
$I = \frac{E}{R_{\text{total}}} = \frac{70}{20} = 3.5 \rightarrow V = E - IR = 70 - 3.5 \times 2 = 63$

$I_1 = I_2 = \frac{I}{2} = \frac{3.5}{2} = 1.75$



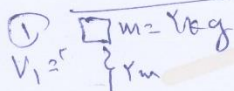
$$U = \frac{1}{\mu} L \int r^2 \rightarrow \frac{r}{r_0} = \frac{1}{\mu} \times \frac{\delta}{r_0} \times \int r^2 \rightarrow \int = 4 \quad \text{۲۲۱}$$

$$B = \frac{\mu_0 N I}{L} \Rightarrow B = \frac{12 \times 10^7 \times 1.2 \times 10^2}{1 \times 10^{-2}} = 7 \times 10^{-3} = 7.0 \text{ G}$$



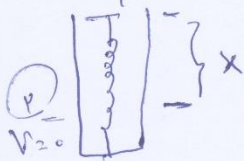
$$\frac{1.1}{1.5} = \frac{B}{t_0} \rightarrow B = 0.7$$

$$\mathcal{E} = -N A \frac{\Delta B}{\Delta t} = \frac{100 \times 10^{-4} \times 10^{-2} \times (1.1 - 0.7)}{10^{-3}} = 4$$



$$\mathcal{E}_1 = \mathcal{E}_2 \rightarrow mg(2+x) + \frac{1}{2}mv^2 = kx$$

$$20(2+x) + 4 = 4x \rightarrow x = 1 \text{ m} = 100 \text{ cm}$$



۲۲۱  
 اگر فضا را با آب پر کنیم، به آب با نیروی شناوری، به آب با نیروی شناوری، به آب با نیروی شناوری.

۲۲۲  
 ۳  
 خوب بود، به آب با نیروی شناوری، به آب با نیروی شناوری، به آب با نیروی شناوری.  
 قطر فن را داخل ظرف قرار دهیم، چون ظرف شناور است، نیروی شناوری  
 اقرار می‌دهد.

$$P_1 = \rho gh = 1000 \times 1.0 \times 10^3 = 1.0 \times 10^6 \text{ Pa}$$

$$P_1 = \rho gh + P_0 = 1000 \times 1.0 \times 10^3 + 1.0 \times 10^5 = 1.1 \times 10^6$$

$$P_2 = 1.2 P_1 = 1.2 \times 1.1 \times 10^6 = 1.32 \times 10^6 = 1000 \times 1.0 \times h + 1.0 \times 10^5$$

$$\rightarrow h = 20,220 \text{ cm} \rightarrow V = Ah = 20 \times 20,220 = 404,400 \text{ cm}^3$$

$$H = \frac{KA \Delta T}{L} \rightarrow \frac{H_{\text{use}}}{H_{\text{sun}}} = \frac{\rho_{\text{ice}}}{\rho_{\text{water}}} \times \frac{r_{\text{ice}}}{r_{\text{water}}} \times \left[ \frac{L}{r_{\text{ice}}} = 1.0 \right] \frac{r_{\text{ice}}}{r_{\text{water}}}$$

$$Q_t = 1.0 \times 2.0 = 2.0 \text{ kJ} \quad \frac{r_{\text{ice}}}{r_{\text{water}}}$$

$$Q_t = m c \Delta \theta + m L_f + m c' \Delta \theta'$$

$$2.0 = \frac{1}{r} \times r_{\text{ice}} \times 2.0 + \frac{1}{r} \times r_{\text{ice}} + \frac{1}{r} \times r_{\text{ice}} \times \theta \rightarrow \theta = 1.0 \text{ } ^\circ\text{C}$$

Yavar  
Physics