

(۴۱) گزینے ۱

$${}_{v_1}^{14} Lu \rightarrow {}_{v_2}^{14} Lu + \frac{1}{2} e$$

$${}_{v_2}^{14} H F$$

(۴۲) در تمام حدود سوپا بستہ است گزینے ۲

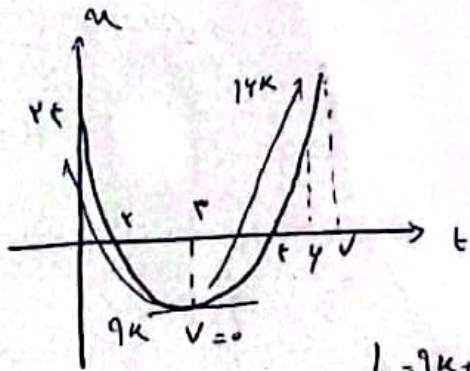
(۴۳) گزینے ۳

$m = 0.4 \Delta \text{ kg}$
 $v_1 = 20 \frac{m}{s}$
 $v_2 = 14 \frac{m}{s}$
 $\omega_t = ?$

$$\omega_t = \Delta k = \frac{1}{r} m (v_2^2 - v_1^2)$$

$$\omega_t = \frac{1}{r} \times 4 \Delta \times \frac{1}{100} \times (14^2 - 20^2)$$

$$\omega_t = -32, 4 \text{ J}$$



$\frac{S_{0-v}}{v_{0-v}} = ?$

(۴۴) گزینے ۲

$$\frac{S}{v} = \frac{L}{\Delta a} = \frac{25k}{vk} = \frac{25}{v}$$

$L = 9k + 14k = 23k$
 $\Delta a = 14k - 9k = vk$

(۴۵) گزینے ۳

$a = 2t^2 - 12t + 18$

$a = 0 \rightarrow v = 4t - 12$

$v_0 = -10 \rightarrow v = 0 \rightarrow t = 3$

$a_0 = 18$

$t = \frac{12}{2} = 6 \text{ s}$ اس وقت

$t = 3 \rightarrow a = 2(3)^2 - 12(3) + 18 = -10 \text{ m}$

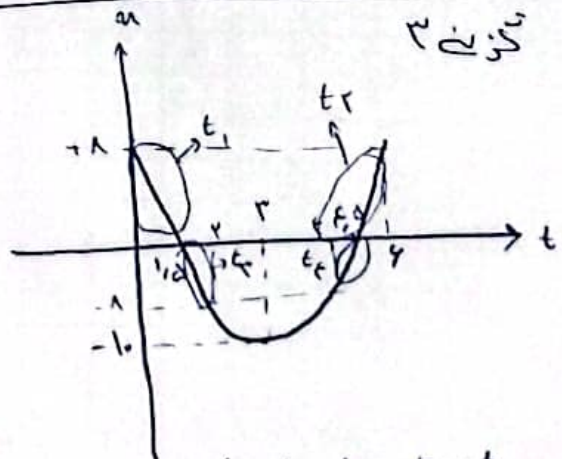
$a = 18 \rightarrow 18 = 2t^2 - 12t + 18 \rightarrow 2t^2 - 12t = 0$

$t = 0, t = 6$

تینوں تقاطع باہر، زمان

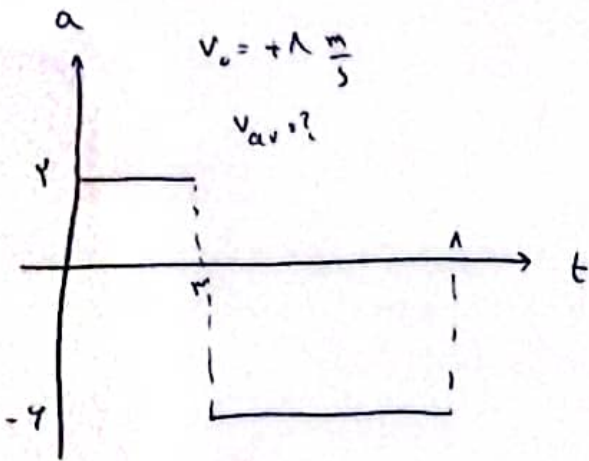
$t = 1.5$
 $t = 4.5$

$a = -18 \rightarrow -18 = 2t^2 - 12t + 18 \rightarrow t = 2.4$



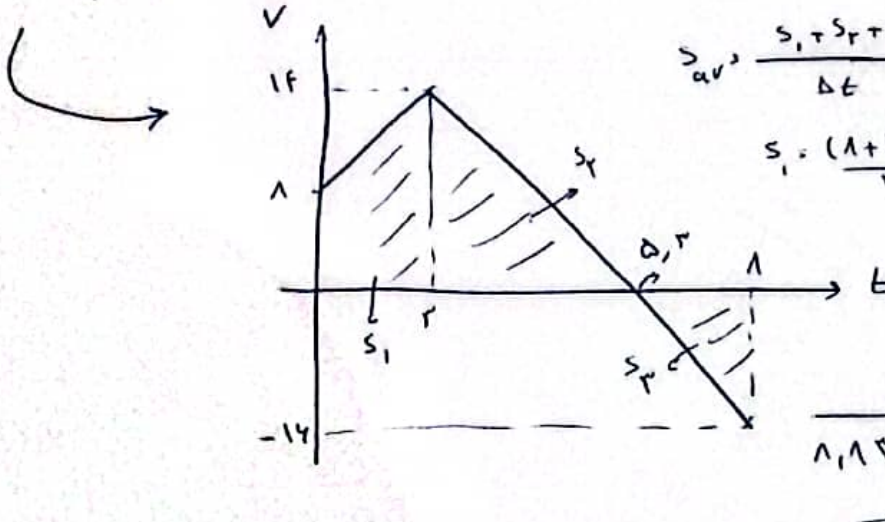
$t = t_1 + t_2 + t_3 + t_4$

$t = 1.5 + 1.5 + 1.5 + 1.5 = 6 \text{ s}$



$v_0 = +1 \frac{m}{s}$

$v_{av} = ?$



$s_{av} = \frac{s_1 + s_2 + s_3}{\Delta t} = \frac{3 \times 1 + 14 \times 1 + 21 \times 1}{5} = \frac{v_i + v_f}{2} = 1, 12$

$s_1 = \frac{(1+14)}{2} \times 3 = 33$

$s_2 = \frac{1}{2} \times 14 \times (5-3) = 14, 1$

$s_3 = \frac{1}{2} \times 14 \times (5-3) = 14, 4$

$1, 12 = \frac{5 \times 2}{5}$

$t=0$
 $v_0 = 0$

$\Delta u = (3-0) \times \frac{1}{2} \times \frac{1}{n} = 1, 5 \times \frac{1}{n}$

$\Delta u = (2-1, 5) \times \frac{1}{2} \times \frac{1}{n} = 0, 25 \times \frac{1}{n}$

$\frac{1, 5}{1, 0} = \frac{0, 25}{\frac{1}{2}}$

گزینہ ۱ [۴۷]



$a = -1/2 g$

$mg - T = m \times 1/2 g \rightarrow T = mg - 1/2 mg$

$T = 1/2 mg = \frac{1}{2} mg$

گزینہ ۲ [۴۸]



$F = m r \omega^2, m_A = m_B, \omega_A = \omega_B$

$F_A = m_A r_A \omega^2 = m \omega^2$

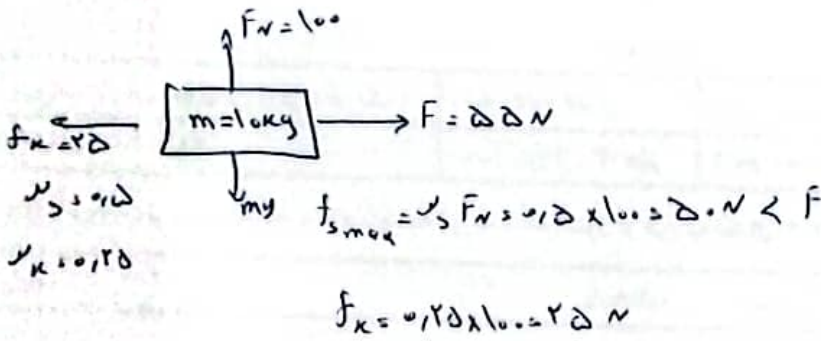
$F_B = m_B r_B \omega^2 = 2 m \omega^2$

$F_B > F_A \rightarrow$ حذف A

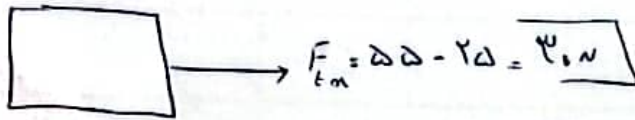
جوں جیسی B کے ساتھ A سے جوڑ کر لگائیں گے

گزینہ ۳ [۴۹]

گزینه ۳

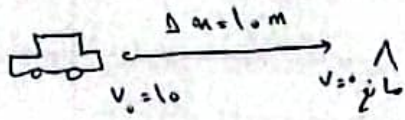


سین حرکت
می کند



گزینه ۱

$v = 34 \frac{\text{km}}{\text{h}} = 10 \frac{\text{m}}{\text{s}}$, $f_k = ?$



$F = m \cdot a \rightarrow \mu_k mg = m \cdot a$

$\mu_k = \frac{a}{g} \rightarrow f_k = m \cdot a$

$v_f^2 - v_i^2 = 2a \Delta x$

$10^2 - 0 = 2a \times 10 \rightarrow a = \frac{100}{20} = 5 \frac{\text{m}}{\text{s}^2}$

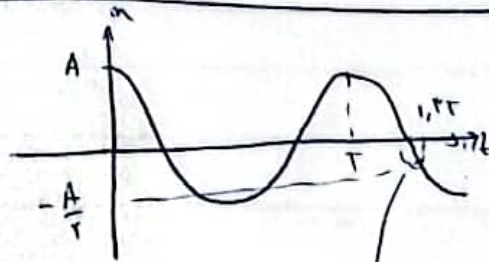
$f_k = 5 \times 1400 = 7000 \text{ N}$

گزینه ۱

$\omega = A \cos \frac{2\pi}{T} t$

$\omega = \frac{2\pi x}{T} = \frac{2\pi}{T} \rightarrow T = \frac{2}{\omega}$

$\Delta t = 0.1 \text{ s} \rightarrow \frac{0.1 \Delta}{\frac{2}{\omega}} = 1.27$



$T = \frac{2}{\omega} \rightarrow \omega = A \cos \frac{2\pi}{T} = -\frac{A}{T}$

$\frac{S}{v} = \frac{\Delta A + \frac{A}{T}}{A + \frac{A}{T}} = \frac{11}{\frac{2}{T} A} = \frac{11}{2} T$

$$E = \lambda \rightarrow E = \frac{1}{r} k A^2 = 4\pi^2 m A^2 + c$$

چون جرم منفید نیست
اندژی و ویژگی های نوسان
کننده وابسته است.

$$v_s \text{ (دایره)} \quad \frac{f}{r} \lambda_f = \textcircled{L} \quad \frac{f_0}{f} = T_d$$

$\lambda = \frac{v}{f}$

$\Delta x = 50 \text{ m} \quad \beta = 90 \text{ dB} \quad P_s ?$

$\lambda = \frac{340}{10} = 34 \text{ m}$

$90 = 10 \log \frac{I}{I_0} \rightarrow \frac{I}{I_0} = 10^9 \rightarrow I = 10^{-3}$

$$P = I a A$$

$$\rightarrow P = 10^{-3} \times 10^{-4} = 10^{-7} \text{ W} = 10^{-1} \mu\text{W}$$

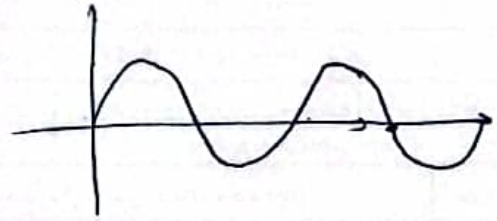
$$A = 10^{-4} \text{ m}^2$$

$$L = 4 \text{ cm} = 0.04 \text{ m}$$

$$m = 4 \text{ g} = 0.004 \text{ kg}$$

$$F = 32 \text{ N}$$

$$v = \sqrt{\frac{FL}{m}} = \sqrt{\frac{32 \times 0.04}{0.004}} = 180 \frac{\text{m}}{\text{s}}$$



$$\frac{L}{2} = \lambda_f = L \rightarrow \frac{4}{10} = 2\lambda \rightarrow \lambda = \frac{4}{10}$$

$$v = \lambda f \rightarrow f = \frac{v}{\lambda} = \frac{180}{\frac{4}{10}} = \frac{180 \times 10}{4} = 450 \text{ Hz}$$

[56] گزینہ ۴

$n' = 3$
 $n = 4$ اولیٰ

$$\frac{1}{\lambda_1} = R \left(\frac{1}{9} - \frac{1}{14} \right) \rightarrow \frac{1}{\lambda_1} = \frac{VR}{126} \rightarrow \lambda_1 = \frac{126}{VR}$$

$n = 5$ دوسری

$$\frac{1}{\lambda_2} = R \left(\frac{1}{9} - \frac{1}{25} \right) \rightarrow \frac{1}{\lambda_2} = \frac{16R}{225} \rightarrow \lambda_2 = \frac{225}{16R}$$

$$\frac{\lambda_1}{\lambda_2} = \frac{\frac{126}{VR}}{\frac{225}{16R}} = \frac{126 \times 16}{225 \times V} = \frac{282}{125V}$$

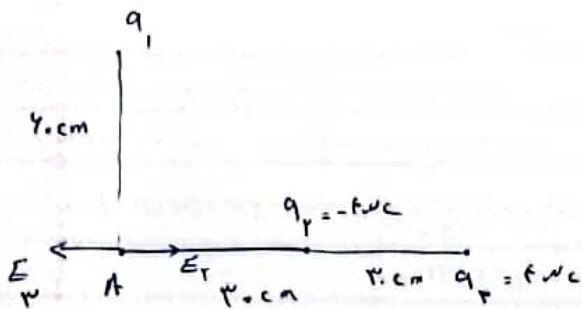
[57] گزینہ ۱

$n = 4$
 $n' = 1$
 $\omega_0 = 0.2$

$$K_{\text{max}} = hf - \omega_0 \rightarrow K_{\text{max}} = 10,000 - 0.2 = 9,999.8$$

$$hf = \Delta E = E_4 - E_1 = \frac{13.6}{16} - \frac{13.6}{1} = -10,000$$

۱۵۹ گزینے ۳



$$E_A = \frac{q \lambda \cdot d}{4 \epsilon_0 r^2}$$

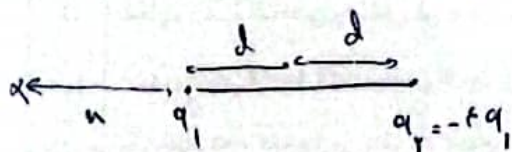
$$E_B = |E_r - E_l| = \left| \frac{k q_r}{r^2} - \frac{k q_c}{r^2} \right|$$

$$E_B = k q \lambda \left(\frac{1}{(1/3)r^2} - \frac{1}{(2/3)r^2} \right) = q \lambda \cdot \frac{1}{3} \times \frac{1}{(1/3)r^2} - \frac{1}{(2/3)r^2} = \frac{q}{f} \times \frac{1}{4} \frac{N}{C}$$

$$E_y = \frac{k q}{(1/4)r^2} = \frac{k q \lambda \cdot \frac{1}{4} \times \frac{1}{(1/4)r^2}}{f} = \frac{q}{f} \times \frac{1}{4} \frac{N}{C}$$

$$E_r = \sqrt{E_B^2 + E_y^2} \rightarrow \frac{q}{14} \times \frac{1}{4} \frac{N}{C} \rightarrow q = 14 \mu C$$

۱۶۰ گزینے



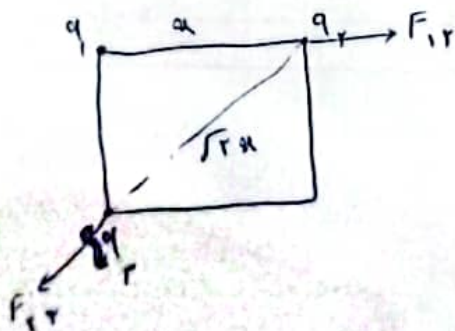
چون دو ذرہ ناہم نام ہیں
نقطہ خارجہ دو بار، وندرتیہ بار، کو حلیہ است

$$E_l = E_r \rightarrow \frac{k q_1}{a^2} = \frac{k \cdot f q_1}{(2d+a)^2} \rightarrow \frac{1}{a} = \frac{f}{2d+a} \rightarrow 2a = 2d+a$$

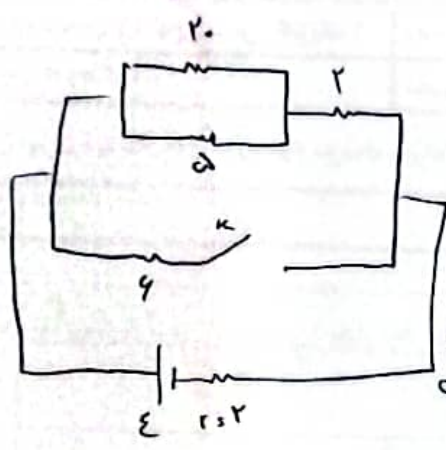
$$\rightarrow a = 2d$$

$$\frac{2d+d+d}{2d} = f \leftarrow \text{نقطہ ا؛ } q_r$$

۱۶۱ گزینے ۲



$$\frac{F_{12}}{F_{23}} = \frac{\frac{k q_1 q_2}{a^2}}{\frac{k q_r q_r}{2a^2}} = 2$$



① لکھنا
 فرض کریں
 بڑی رات کا
 عدد ۴
 شدت

$R_t = 4 + 2 = 4$ و $I = \frac{\epsilon}{R} = \frac{\epsilon_0}{4+2} = 5A$
 $\epsilon = \epsilon_0 - rI \rightarrow P_1 = I(\epsilon - rI) = 5(\epsilon_0 - 2 \times 5) = 15W$

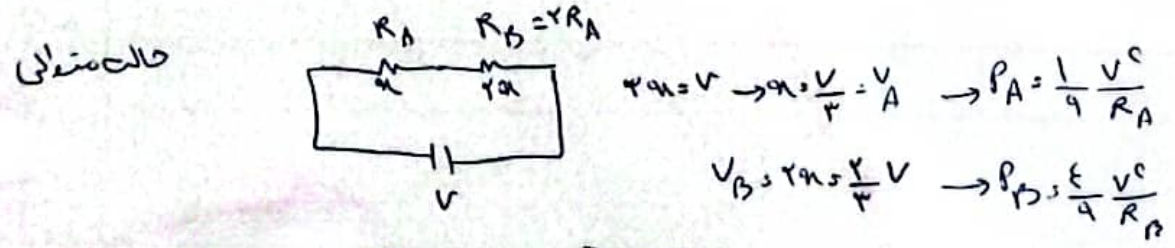
② لکھنا
 $R_t = \frac{4 \times 4}{10} = 3 \rightarrow I = \frac{\epsilon_0}{5} = 1A$

$P_2 = I(\epsilon - rI) = 1(\epsilon_0 - 2 \times \frac{\epsilon_0}{5}) = 192$

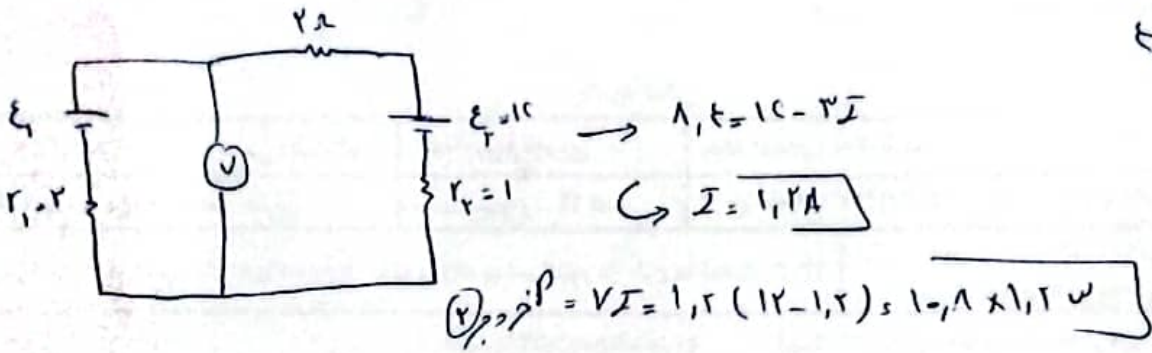
$\frac{P_2}{P_1} = \frac{192}{15}$ سے اندازہ

$\frac{192}{15} = 12.8 \rightarrow \frac{128}{10} \rightarrow 12.8 \rightarrow 13$

حالت اول : $P_A = \frac{V^2}{R_A} \rightarrow \frac{P_A}{P_B} = \frac{V^2}{R_A} \div \frac{V^2}{R_B} \rightarrow R_B = 2R_A$



$\frac{P_A}{P_B} = \frac{1}{4} \frac{R_B}{R_A} = \frac{1}{4} \times 2 = \frac{1}{2}$

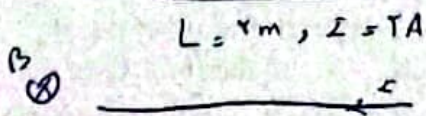


① در صورتی $P = P_r - P_{مغزی} = P_r - RI^2 = 10.1 \times 1.2 - 2 \times 1.2^2 = 1.2 \times \frac{10.1 - 2.4}{1.2}$

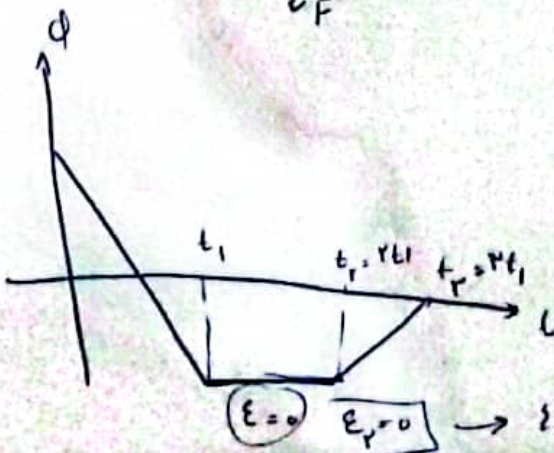
$\frac{P_c}{P_i} = \frac{10.1 \times 1.2}{1.2 \times 10} = \frac{10.1}{10} = \frac{9}{10}$

باقی در شکل $R_2 > R_1$

تقاطع با محور q_1, q_2 \rightarrow $q_2 > q_1$ \rightarrow $R_1 = \frac{mv}{q_1 B}$ $R_2 = \frac{mv}{q_2 B}$
 نیروی کوریس جهت حرکت \rightarrow متقوس هست \rightarrow $q_2 B = \frac{mv}{R_1} \rightarrow R_1 = \frac{mv}{q_1 B}$
 $\frac{mv}{q_2 B} > \frac{mv}{q_1 B} \rightarrow |q_1| > |q_2|$



طبقه اول $F = L I B = 2 \times 2 \times 0.1 \times 2 = 0.8 N$



$\epsilon_1 = \frac{N \Delta \phi}{\Delta t} = \frac{N \times 2 \phi_{max}}{t_1}$

$\epsilon_2 = \frac{N \phi_{max}}{t_1} \rightarrow \epsilon_1 = 2 \epsilon_2$

حذف $\epsilon_1 = 0$ \rightarrow $\epsilon_2 = 0$

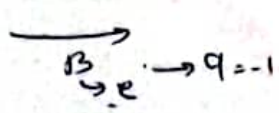
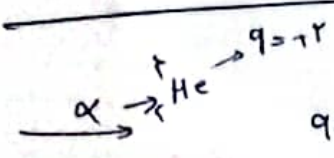
$L = 2,28 \text{ cm}$

$I = \Delta \sin \omega t \rightarrow I_{max} = \Delta A$

$v_{max} (\Delta m) = \frac{1}{r} L I^c$
 $\omega = 100 \pi$

$\hookrightarrow \Delta \times 10^{-2} = \frac{1}{r} \times L \times \Delta \rightarrow L = \frac{r}{\Delta} \times 10^{-2} = f \times 10^{-2}$

$\hookrightarrow L = \frac{v \times A}{f} \rightarrow v^c = \frac{f \times 10^{-2}}{A} \times \frac{r \times 10^{-2}}{f} = 100 \rightarrow v = 100$



$q v B = \frac{m v^2}{R} \rightarrow R_\alpha = \frac{m v}{q_\alpha} = \frac{m v}{2 e}$

$R_\beta = \frac{m v}{q_\beta} = \frac{m v}{e}$

$\rightarrow \frac{R_\alpha}{R_\beta} = \frac{m_\alpha}{2 m_\beta}$

$m_\alpha > m_\beta \rightarrow \frac{m_\alpha}{m_\beta} > 1$

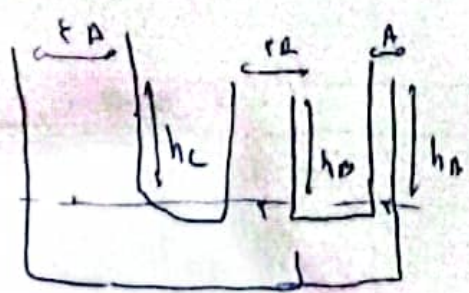
$v_\alpha = v_\beta$



پس B کتبه مغزنی بزرگتر

ball $P = \frac{m_1 + m_2}{v_1 + v_2} = \frac{10 + 10}{2 + 10} = \frac{20}{12} = 1,6$

همه در یک سطح هستند $\rightarrow P_1 = P_2 = P_3 \rightarrow (\rho g h_A) + \frac{P_1}{A} = (\rho g h_B) + \frac{P_2}{A} = \rho g h_C + \frac{P_3}{A}$

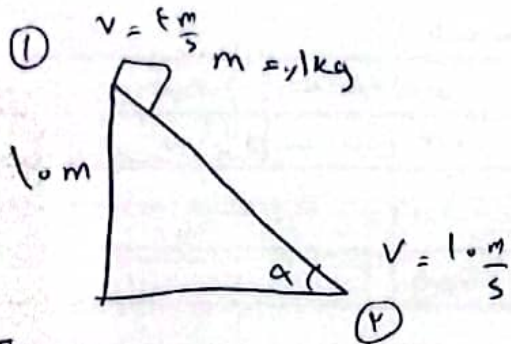


$P_1 > P_2 > P_3$

$h_C > h_B > h_A \rightarrow$

گزینه ۱

کتاب [۷۳]



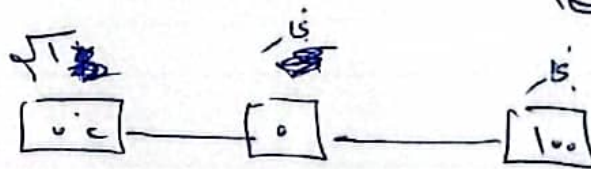
$$W_f = \Delta E$$

$$E_1 = K_1 + U_1 = \frac{1}{2} \times 1 \times 16 = 8 + 1 \times 10 \times 1 = 18 \text{ J}$$

$$E_2 = K_2 + U_2 = \frac{1}{2} \times 1 \times 100 = 50 \text{ J} \rightarrow \Delta E = 50 - 18 = 32 \text{ J}$$

کتاب [۷۴]

~~m = 100g~~
جرم ها بر حسب گرم



$$Q_1 = 48 \text{ J} + m \frac{L}{f} = 48 \text{ J} + 33 \text{ J} = 81 \text{ J}$$

$$Q_v = m \frac{L}{v} + m c \theta = 2256 \text{ m} + 120 \text{ m} = 2376 \text{ m}$$

$$Q_1 = Q_v \rightarrow 81 \text{ J} = 2376 \text{ m} \rightarrow m = 18 \text{ g}$$

کتاب [۷۵]

$w = F \cdot v$

$$\frac{P_1 v_1}{T_1} = \frac{P_2 v_2}{T_2}$$

$$\hookrightarrow (P + 100) \times 24A = (3P + 100) \times 2CA$$

$$\hookrightarrow 24P = 600 \rightarrow P = 100 \quad P = \frac{F}{A} \rightarrow A = \frac{F}{P} = \frac{F_0}{100} = F_0 \times 10^{-2} \text{ m}^2$$