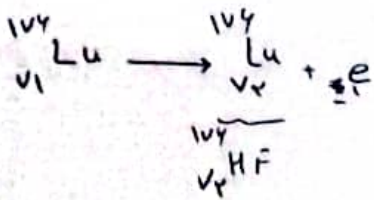


(۴۱) گزینے ۱



(۴۲) در تمام هردو سوایب بسته است گزینے ۲

(۴۳) گزینے ۳

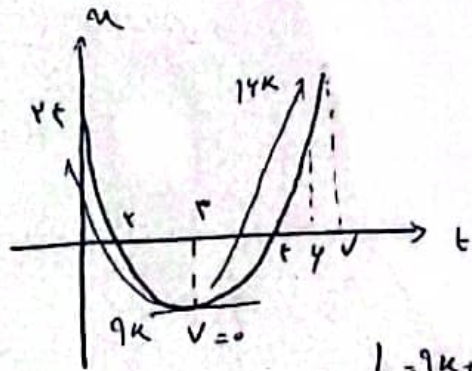
$$m = 0.45 \text{ kg} \rightarrow \omega_t = \Delta k = \frac{1}{r} m (v_f^2 - v_i^2)$$

$$v_i = 20 \frac{\text{m}}{\text{s}}$$

$$v_f = 14 \frac{\text{m}}{\text{s}}$$

$$\omega_t = \frac{1}{r} \times 45 \times \frac{1}{100} \times (14^2 - 20^2)$$

$$\omega_t = -32,4$$



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

$$\frac{S}{v} = \frac{L}{\Delta a} = \frac{25K}{VK} = \frac{25}{V}$$

$$L = 9K + 14K = 23K$$

$$\Delta a = 14K - 9K = 5K$$

(۴۴) گزینے ۳

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

$$a = f \rightarrow v = ft - 12t$$

$$v_0 = -12 \rightarrow v = 0 \rightarrow t + 12 = 0$$

$$a_0 = 18$$

$$t = \frac{12}{f} = 3 \text{ s}$$

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

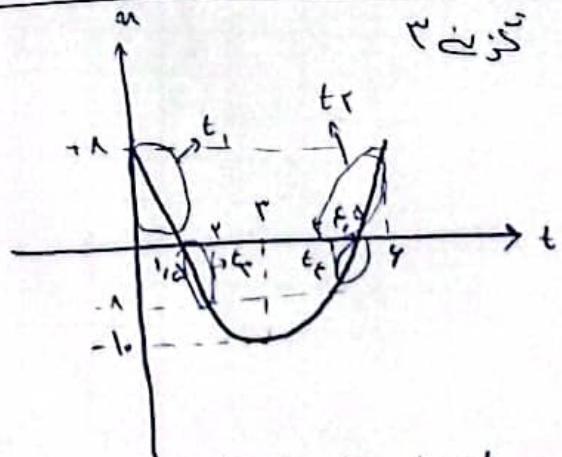
$$a = 18 \rightarrow 18 = 2t^2 - 12t + 18 \rightarrow 2t^2 - 12t = 0$$

$$\rightarrow t = 0, t = 6$$

$$t = 1,5 \text{ s} \text{ (پہلا تقاطع باء زمان)}$$

$$t = 4,5 \text{ s}$$

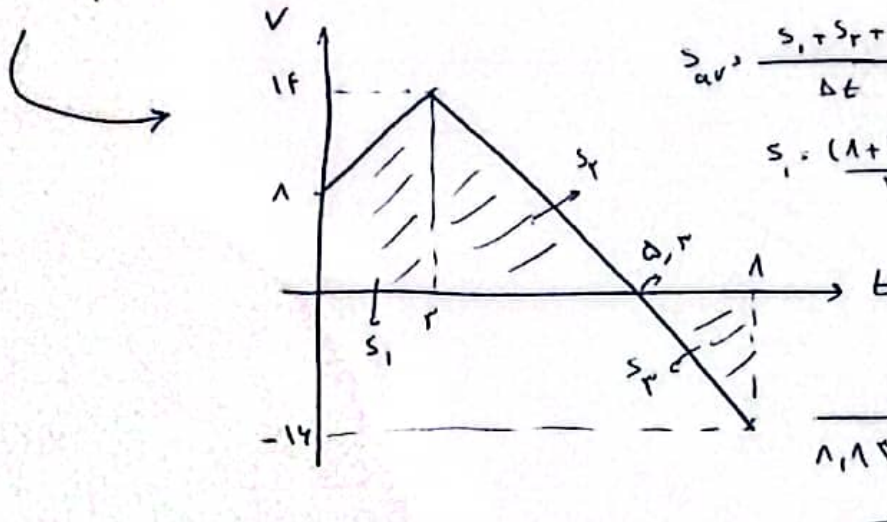
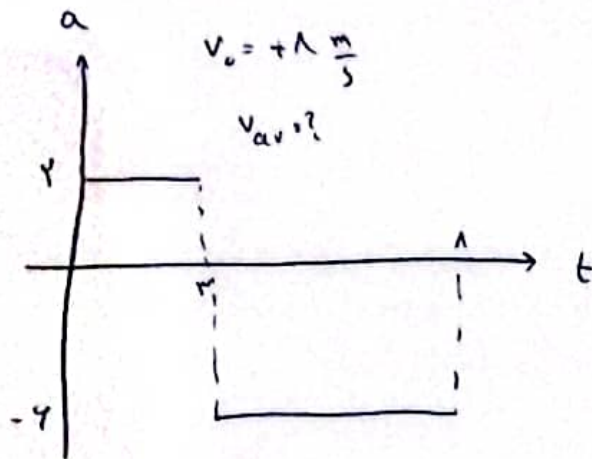
$$a = -18 \rightarrow -18 = 2t^2 - 12t + 18 \rightarrow t = 2,4$$



$$t = t_1 + t_2 + t_3 + t_4$$

$$t = 1,5 + 3 + 1,5 + 0,5 = 6 \text{ s}$$

گزینہ ۴ [۴۶]



$$s_{av} = \frac{s_1 + s_2 + s_3}{\Delta t} = \frac{33 + 17.1 + 21.4}{5} = \frac{v_i + v_f}{2} = 1.12$$

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

$$s_2 = \frac{1}{2} \times 14 \times (5 - 3) = 17.1$$

$$s_3 = \frac{1}{2} \times 14 \times (5 - 3.5) = 21.4$$

$$1.12 = \frac{\Delta x}{\Delta t}$$

$t=0$
 $v_0 = 0$

$$\Delta u = (v_0 - 0) \Delta t + \frac{1}{2} a \Delta t^2 = 0 + \frac{1}{2} \times 2 \times 3^2 = 9$$

$$\Delta u = (v_0 - 0) \Delta t + \frac{1}{2} a \Delta t^2 = 0 + \frac{1}{2} \times 2 \times 3^2 = 9$$

$$\frac{v_0 - 0}{1.0} = \frac{0}{c} + \frac{a}{2}$$

گزینہ ۱ [۴۷]



$a = -1/8 g$

$$mg - T = m \times 1/8 g \rightarrow T = mg - 1/8 mg$$

$$T = 7/8 mg = \frac{1}{8} mg$$

گزینہ ۲ [۴۸]



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

$$F_A = m_A \times r \times \omega^2 = m \omega^2$$

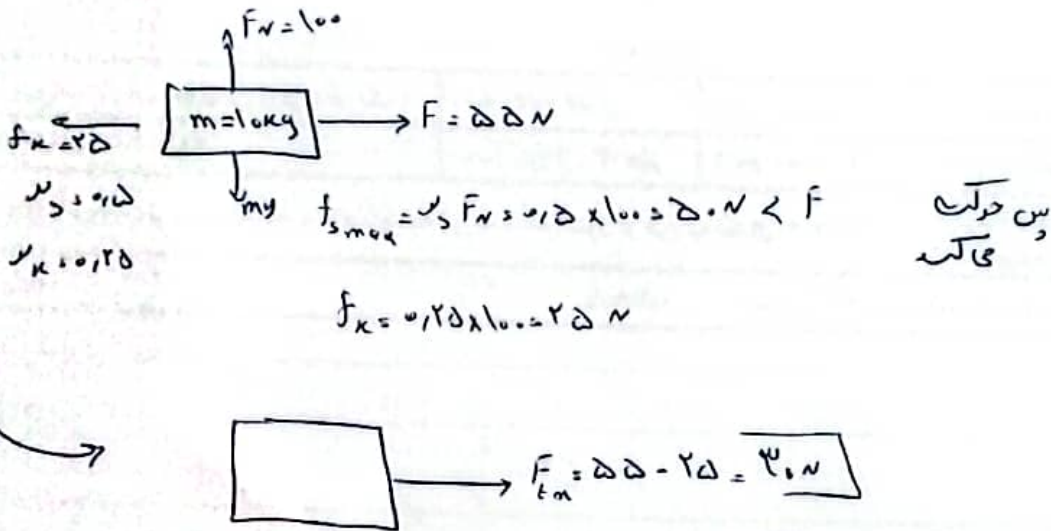
$$F_B = m_B \times 2r \times \omega^2 = 2m \omega^2$$

$F_B > F_A \rightarrow$ حذف A

چون جسم B بزرگتر است و دورتر است و زاویه بزرگتر است

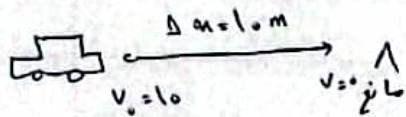
گزینہ ۳ [۴۹]

۵۰ گزینے ۳



۵۱ گزینے ۳

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



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

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

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

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

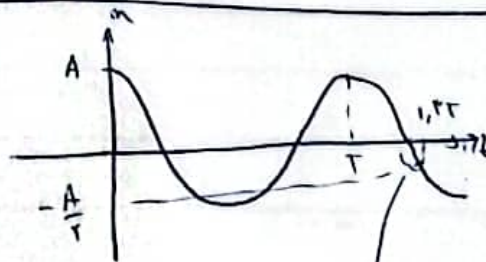
$f_k = 5 \times 1400 = 7000 \text{ N}$

۵۲ گزینے ۱

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

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

$\Delta t = 0.1 \text{ s} \rightarrow \frac{0.1}{T} = 1.2 \text{ T}$



$T + \frac{T}{6} \Rightarrow x = A \cos 120^\circ = -\frac{A}{2}$

$\frac{s}{v} = \frac{\Delta A + \frac{A}{2}}{A + \frac{A}{2}} = \frac{\frac{3}{2}A}{\frac{3}{2}A} = 1$

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

$$\frac{E_c}{E_i} = 1 \rightarrow \text{چون جدم منفید نیست}$$

اندزی و دیرگی های نوسان
کنده و است است.

$$v_s \text{ و } \lambda_f = \frac{L}{\frac{f}{r}} = \frac{L}{\frac{f}{10}} = 10L$$

$$\lambda = \frac{4}{10} \rightarrow q_0 = 10 \log \frac{E}{E_0} \rightarrow \frac{I}{I_0} = 10^9 \rightarrow I = 10^{-3}$$

$\lambda = 20m$ $B = 9.0dB$ $P_s?$

$$P = I a A$$

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

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

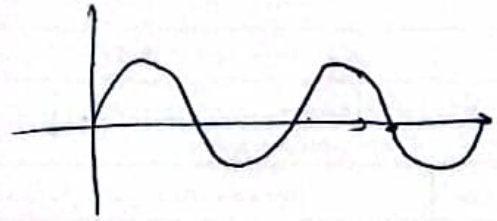
سرفه ۲

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

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

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

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



$$\frac{v}{\lambda} = f \rightarrow \frac{180}{\lambda} = 4 \rightarrow \lambda = \frac{180}{4}$$

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

[۵۶] گزینے ۴

[۵۷] گزینے ۵

$$n' = 3 \rightarrow \frac{1}{\lambda_1} = R \left(\frac{1}{9} - \frac{1}{14} \right) \rightarrow \frac{1}{\lambda_1} = \frac{VR}{126} \rightarrow \lambda_1 = \frac{126}{VR}$$

$$n = 4 \rightarrow \frac{1}{\lambda_2} = R \left(\frac{1}{9} - \frac{1}{25} \right) \rightarrow \frac{1}{\lambda_2} = \frac{16R}{225} \rightarrow \lambda_2 = \frac{225}{16R}$$

$$\frac{\lambda_1}{\lambda_2} = \frac{\frac{126}{VR}}{\frac{225}{16R}} = \frac{126 \times 16}{225 \times V} = \frac{252}{125V}$$

[۵۸] گزینے ۱

$$n = 4$$

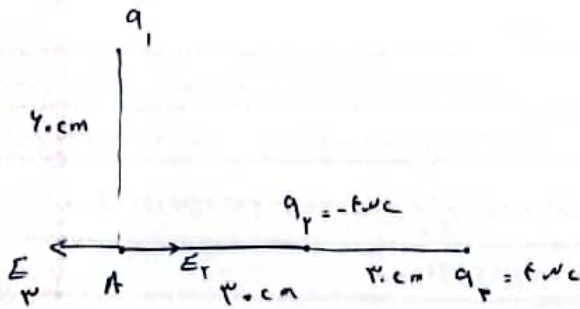
$$n' = 1$$

$$\omega_0 = 0.2$$

$$K_{\text{max}} = hf - \omega_0 \rightarrow K_{\text{max}} = 11.75 - 0.2 = 11.55$$

$$hf = \Delta E = E_4 - E_1 = \frac{13.6}{16} - \frac{13.6}{1} = 11.55$$

۵۹ گزیده



$$E_A = 5 \lambda \cdot \frac{N}{C}$$

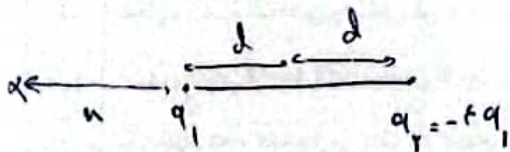
$$E_n = |E_r - E_r| = \left| \frac{kq_r}{r_r^2} - \frac{kq_c}{r_c^2} \right|$$

$$E_n = kq_1 \left(\frac{1}{(1/3)r} - \frac{1}{(1/4)r} \right) = 9 \lambda \cdot \frac{N}{C} \times \frac{1}{14} = 3 \times 10^5 \frac{N}{C}$$

$$E_y = \frac{kq}{(1/4)r} = \frac{9 \lambda \cdot \frac{N}{C} \times \frac{1}{14}}{14} = \frac{9}{14} \lambda \cdot \frac{N}{C}$$

$$E_r = \sqrt{E_n^2 + E_y^2} \rightarrow 2 \times 10^5 \lambda \cdot \frac{N}{C} + \frac{9}{14} \lambda \cdot \frac{N}{C} \rightarrow q = 14 \mu C$$

۶۰ گزیده



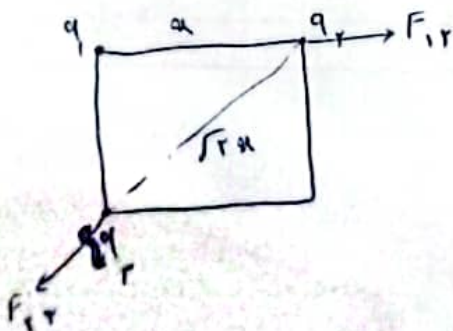
چون دو ذره نا هم نام هستند پس
نقطه خالص در بار و ذراته بار که جاذبه است

$$E_1 = E_r \rightarrow \frac{kq_1}{a^2} = \frac{k \times 4q_1}{(2d+a)^2} \rightarrow \frac{1}{a} = \frac{2}{2d+a} \rightarrow 2a = 2d+a$$

$$\rightarrow a = 2d$$

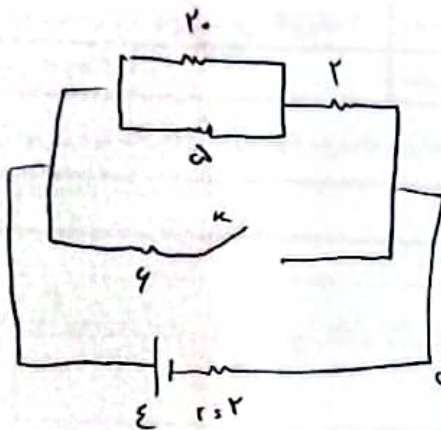
$$2d + d + d = 4d = Fd$$

۶۱ گزیده



$$\frac{F_{1c}}{F_{1r}} = \frac{\frac{kq_1 q_c}{a^2}}{\frac{kq_1 q_r}{2a^2}} = 2$$

۴۲ گزینے ۳



① کلید باز
 $R_t = 4 + 2 = 4$ و $I = \frac{\varepsilon}{R_t} = \frac{\varepsilon}{4} = 5A$
 فرض کریں $\varepsilon = 40V \rightarrow P_4 = I^2(4 - 2) = 5(40 - 2 \times 5) = 10W$
 برقی رابطہ کار
 عدد ۴ انتخاب
 شدہ اس

② کلید بند $\rightarrow R_t = \frac{4 \times 4}{10} = 3 \rightarrow I = \frac{\varepsilon}{3} = 14A$

• $P_4 = I^2(4 - 2) = 14(40 - \frac{2 \times 14}{1}) = 192$

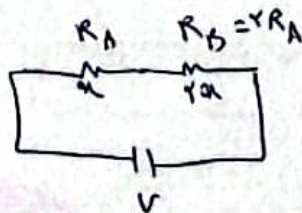
$\rightarrow \frac{P_4}{P_1} = \frac{192}{10} = 19.2$ سے اندازہ

$\frac{192}{10} \cdot 1.18 \rightarrow \frac{108}{11} \rightarrow 28\%$

۴۳ گزینے ۴

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

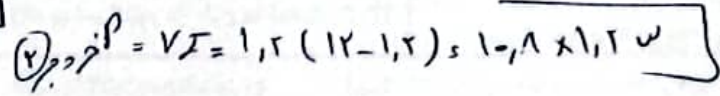
حالت متوالی



$2V = V \rightarrow V = \frac{V}{2} = V_A \rightarrow P_A = \frac{1}{4} \frac{V^2}{R_A}$

$V_B = 2V = \frac{2}{3} V \rightarrow P_B = \frac{4}{9} \frac{V^2}{R_B}$

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



$$\frac{P_c}{P_1} = \frac{1.1 \times 1.5}{1.1 \times 1.1} = \frac{1.1}{1.1} = 1$$

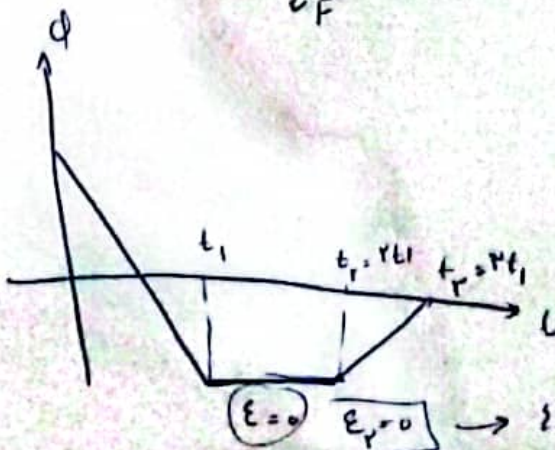
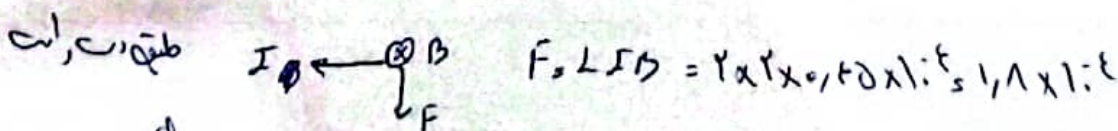
۲۰۴۵ $\sqrt{45}$

[illegible]

$$\frac{mv}{q_1 B} > \frac{m\sigma}{q_1 B} \rightarrow |q_1| > |q_2|$$

$$R_T = \frac{mv}{qTB}$$

۴۴ مکتبہ



$$\mathcal{E}_1 = \frac{N \Delta \phi}{\Delta t} + \frac{N \chi \phi_{max}}{t_1}$$

$$\epsilon_r = \frac{V \phi_{max}}{t_1} \rightarrow \epsilon_i = r \epsilon_r$$

۴۷ [گزشتہ ۱]

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

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

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

$$\hookrightarrow \Delta \times 10^{-3} = \frac{1}{T} \times L \times \Delta \rightarrow L = \frac{T}{\Delta} \times 10^{-3} = 2 \times 10^{-3}$$

$$\hookrightarrow L = \frac{v \mu_0 A}{L} \rightarrow v^c = \frac{2 \times 10^{-3} \times 2,28 \times 10^{-3}}{4 \pi \times 10^{-7} \times 2 \times 10^{-3}} = 100 \rightarrow v = 100$$

گزینه ۶۹

$$\alpha \rightarrow H^c \rightarrow q = +2$$

$$B \rightarrow e^- \rightarrow q = -1$$

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

$$R_B = \frac{m v}{q B} = \frac{m_e v}{1 B} \rightarrow \frac{R_\alpha}{R_B} = \frac{m_\alpha}{2 m_B}$$

$$m_\alpha \gg m_B \rightarrow \frac{m_\alpha}{m_B} \gg 1$$

$$v_\alpha = v_B$$

$$\hookrightarrow R_\alpha \gg R_B$$

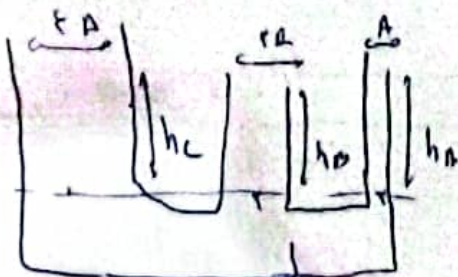
مسیر B نسبت به مسیر A

گزینه ۷۰

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

گزینه ۷۱

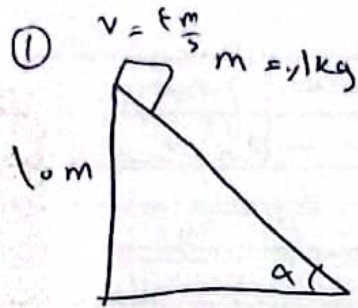
$$P_1 = P_2 = P_3 \rightarrow (\rho g h_A) + \frac{\rho_1 g}{A} = (\rho g h_B) + \frac{\rho_2 g}{2A} = \rho g h_C + \frac{\rho_3 g}{2A}$$



$$P_1 > P_2 > P_3$$

$$h_C > h_B > h_A \rightarrow \text{گزینه ۱}$$

[۷۳] گزینہ ۲



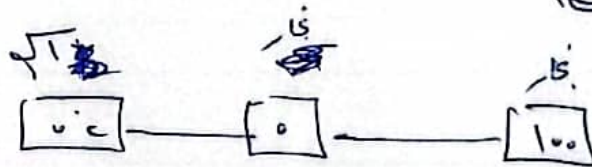
$$W_f = \Delta E$$

$$E_i = K_i + U_i = \frac{1}{2} \times 1 \times 1^2 + 1 \times 1 \times 1.0 = 1.5 \text{ J} = 1.5 \text{ J}$$

$$E_f = K_f + U_f = \frac{1}{2} \times 1 \times 1.0^2 = 0.5 \text{ J} \rightarrow \Delta E = 0.5 - 1.5 = -1.0 \text{ J}$$

[۷۴] گزینہ ۲

$m = 100 \text{ g}$
حرکت ہا پر جب گرم



$$Q_i = 48 \text{ J} + m L_f = 48 \text{ J} + 100 \times 336 = 33648 \text{ J}$$

$$Q_v = m L_v + m c \theta = 100 \times 2260 + 100 \times 1 = 226100 \text{ J}$$

$$Q_i = Q_v \rightarrow 33648 = 226100 \rightarrow m = 100 \text{ g}$$

[۷۵] گزینہ ۲

w, E, v

$$\frac{P_1 v_1}{A_1} = \frac{P_2 v_2}{A_2}$$

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

$$24P = 600 \rightarrow P = 25 \text{ } P = \frac{F}{A} \rightarrow A = \frac{F}{P} = \frac{F_0}{100} = F_0 \times 10^{-2} \text{ m}^2$$