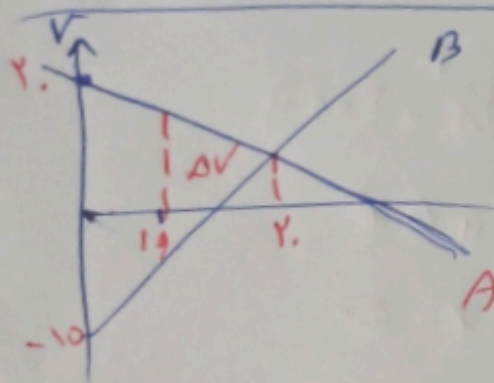


دروس: طالب دروس - دبیرستان طالقانی میناب  
۰۹۱۷۷۴۵۲۴۹۰

kg m/s<sup>2</sup>

(۲) -۱۵۴

(۳) -۱۵۷



$$x_A = a_A t + v_{0A} = -2 \cdot a + 20$$

$$v_B = a_B t + v_{0B} = +2 \cdot a - 10$$

$$A \quad v_A = v_B \rightarrow -2 \cdot a + 20 = 2 \cdot a - 10$$

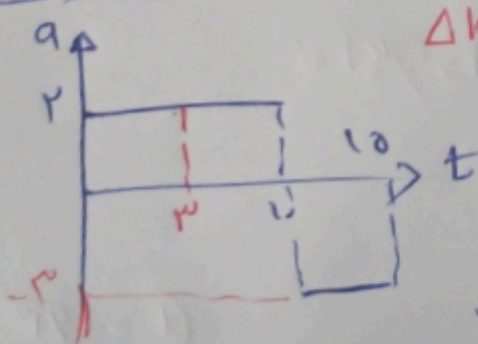
$$a_A + a_B = \frac{30}{2} \quad (1)$$

$$v_{A10} = -2 \cdot a + 20 \Rightarrow \Delta v = 10 \cdot (a_B + a_A) + 30$$

$$v_{B10} = 2 \cdot a - 10 = 10 \cdot a$$

$$\Delta x = \frac{1}{2} (10 \cdot a + 30) (10) = 475 \cdot a$$

(۲) ۱۵۸



$$\Delta v = 4 \Rightarrow v_3 = v_0 = 4 \Rightarrow v_0 = -5$$

$$v_7 = at + v_0 = 10 - 5 = 5$$

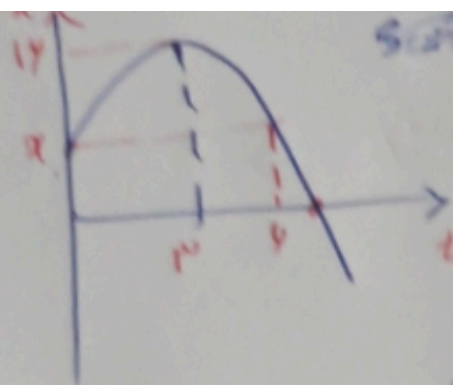
$$v_{10} = 20 - 5 = 15, v_{12} = -4 + 15 = 9$$

$$\Delta x = \Delta x_{v=10} + \Delta x_{10-12} = \frac{1}{2} (9 + 15) (2) + \frac{1}{2} (15 + 9) (2)$$

$$\Delta x = 34 + 26 = 60, v_{av} = \frac{\Delta x}{\Delta t} = \frac{60}{5} = 12$$

(۳) ۱۵۹





subt  $l = st = 4 \times 9 = 18$

(3) -14

$$14 - x = 9 \Rightarrow x = 14 - 9 = 5$$

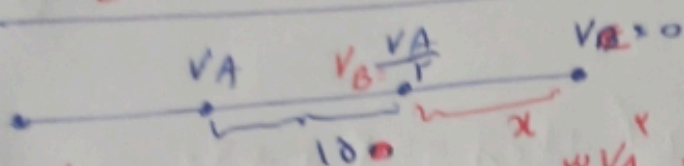
$$v_f = 0 \Rightarrow va + v_o = 0 \Rightarrow v_o = -va$$

$$\Delta x = \frac{1}{2}(v_o + v_f)(t) \Rightarrow a = -2$$

$$9 = \frac{1}{2}(v_o)(t) \Rightarrow v_o = 4$$

$$x = \frac{1}{2}at^2 \Rightarrow -14 = \frac{1}{2}(-2)t'^2 \Rightarrow t' = 14 \Rightarrow t = 7$$

$$t = 7 + 7 = 14$$



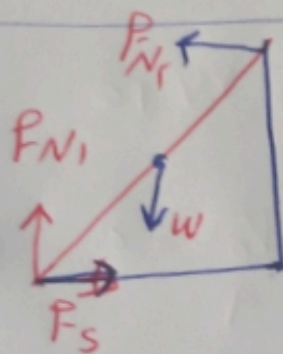
(4) -141

$$\frac{V_A}{r} - V_A = -ra \Delta x \Rightarrow \frac{V_A}{r} = -ra \Delta x \Rightarrow V_A = -ra \Delta x$$

$$V_C - V_B = -ra \Delta x \Rightarrow 0 - \frac{1}{r}V_A = -ra \Delta x$$

$$-1 \dots a = -ra \Delta x \Rightarrow \Delta x = 50$$

$$x = 100 + 50 = 150 \text{ m}$$



$$W = 140 \text{ (N)} = FN$$

$$R = FS + FNR$$

$$FS = 100 - 140 = -40 \times 34$$

$$FS = 10 \times 14 = 140$$

$$FS = \frac{1}{3} FN$$

$$\mu_s = \frac{FS}{FN} = \frac{140}{140} = 1$$

(1) -145

$$F - F_k = ma \Rightarrow F - \mu_k(1400) = 140 \times \frac{1}{2}$$

(1) -146

$$F - \mu_k(1400) = 0 \Rightarrow F = 340$$

$$F - F_k = m'a \Rightarrow 340 - \mu_k m'(10) = \frac{m'}{2} \Rightarrow 340 = \frac{\Delta m'}{2} \Rightarrow m' = 140$$

$$\Delta m = 140 - 140 = 0$$

$$F_N - mg = ma \Rightarrow F_N - F_N' = \gamma m a$$

$$F_N' - mg = -\gamma m a \quad \gamma v_B = \omega r a$$

$$a = \frac{v}{\gamma}$$

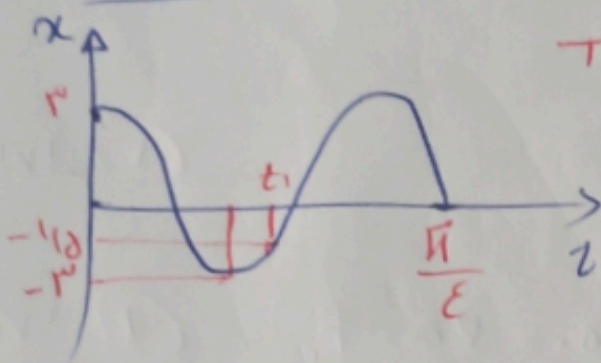
(P) - 14E

$$P = \frac{GMm}{r^2} = \frac{mv^2}{r} \quad r_A = R_e + h$$

(P) - 14D

$$v_A^2 = \frac{GM}{r_A} = \frac{GM}{\frac{R_e}{\epsilon}} \Rightarrow v_B^2 = \frac{GM}{\frac{R_e}{\epsilon}}$$

$$\frac{k_A}{k_B} = \frac{m_A}{m_B} \times \left( \frac{v_A}{v_B} \right)^2 = \frac{m}{\gamma m} \times \frac{r}{\epsilon} = \frac{\omega}{1\epsilon}$$



$$T + \frac{T}{\epsilon} = \frac{\pi}{\epsilon}$$

$$\omega \frac{T}{\epsilon} = \frac{\pi}{\epsilon} \Rightarrow T = \frac{\pi}{\omega}$$

$$\omega = \frac{2\pi}{T} = \frac{2\pi}{\frac{\pi}{\omega}} = 1$$

$$F = -kx = -m\omega^2 x = 1 \times 100 \times 1/2 = 50$$

(P) - 14Y

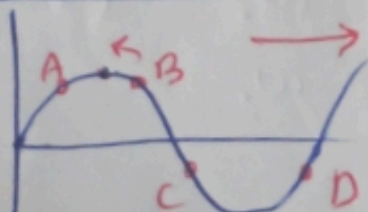
$$m = 100g = 0.1, k = 100, A = 1cm$$

(P) - 14V

$$k = m\omega^2 \Rightarrow 100 = 0.1\omega^2 \Rightarrow \omega^2 = \frac{100}{0.1} = 1000$$

$$\omega = 10\sqrt{10}, T = \frac{2\pi}{\omega} = \frac{2\pi}{10\sqrt{10}} = \frac{\sqrt{10}}{50} = \frac{1}{50}$$

$$\frac{\Delta t}{T} = \frac{1}{\frac{1}{50}} = 50 \Rightarrow \Delta t > \frac{T}{50} \quad \ell > 1A = 1cm$$



(P) - 14A



$$13.1. \log \frac{I}{I_0} \rightarrow 94.1. \log \frac{I}{I_0}$$

(1) - 147

$$\log \frac{I}{I_0} = 94.1 \rightarrow \log \frac{I}{I_0} = 9 + 4(10^4) = 9 + 4 \log 10$$

$$\log \frac{I}{I_0} = \log 10^9 \times 10^4 \rightarrow I = 10^9 \times 10^4 = 10^{13}$$

$$I = I_0 \times 10^9 \times 10^4 = 10^9 \times 10^4 = 10^{13}$$

$$\frac{\lambda_r}{\lambda} = \frac{v_r}{v_1} = \frac{\sin \theta_r}{\sin \theta_1} = \frac{\sin \theta_0}{\sin \theta_0} = \frac{1}{\frac{r}{r}} = \frac{\sqrt{r}}{r}$$

(14) - 147

$$\frac{v_1}{v_r} = \frac{r}{\sqrt{r}} = \frac{r \sqrt{r}}{r} = \sqrt{r}$$

(15) - 147

$$f_{n+1} - f_n = f_1 \rightarrow r \Delta - 1 \Delta = v \Delta = f_1$$

(1) - 147

$$f_1 = \frac{v}{rL} \Rightarrow v = rL f_1 = r \times 10 \times v \Delta = v \Delta$$

$$\frac{EA}{EB} < 10 \rightarrow \frac{FA}{FB} < 10, FA - FB = 9 \times 10^4 \text{ N}$$

(16) - 147

$$10 FB = 9 \times 10^4 \text{ N} \rightarrow FB = 9 \times 10^3 \text{ N}$$

$$FA = 10 \times 10^4 \text{ N}, \lambda = \frac{c}{f} = \frac{3 \times 10^8}{10 \times 10^4} = 3 \times 10^3 \text{ m}$$

$$K_r = \frac{1}{f} K_i$$

$$K_i = f$$

$$K_r < 1$$

$$K_i = hf - \omega_0 \Rightarrow r = h \frac{c}{\lambda} - \omega_0$$

$$K_r = hf - \omega_0 = 1 = h \frac{c}{r\lambda} - \omega_0$$

$$r = \omega_0 \rightarrow r$$

$$f_0 = \frac{\omega_0}{h} = \frac{r}{h \times 10^4}$$

(17) - 147



$$E_n = -\frac{E_R}{nr} \quad E_1 = -13.6 \text{ eV}$$

(1) - 1v0

$$E_1 = -\frac{13.6}{1} = -13.6 \quad E_2 = -\frac{13.6}{4}$$

$$E_3 = -\frac{13.6}{9}$$

$$E_4 = -\frac{13.6}{16}$$

9

(f) - 1v4

$$q.T \rightarrow -\beta + \frac{A}{Z} X$$

(f) - 1v4

$$A = 23E, \quad Z = 91, \quad N = 23E - 91 = 13E$$

$$\frac{Z}{n} = \frac{91}{13E}$$

3. cm

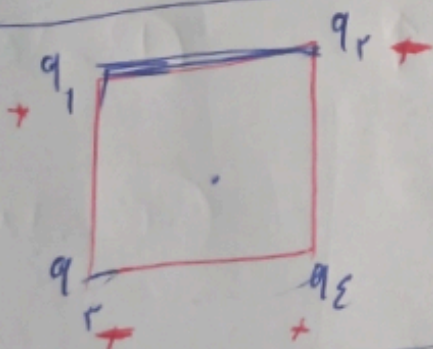
4. cm

$$E_T = E_1 + E_2$$

$$1000000 = \left(\frac{kq}{r}\right)^2 + \left(\frac{kq}{r}\right)^2$$

$$1000000 = 2\left(\frac{kq}{r}\right)^2 \Rightarrow \left(\frac{kq}{r}\right)^2 = 1 \Rightarrow q = 1 \times 10^{-6}$$

(3) - 1v4



(v) - 1v4

$$r' = \frac{1}{2} r$$

(v) - 1v4

$$F_r = \frac{kq_1q_2}{r^2} + \frac{kq_1q_3}{r^2} = \frac{kq_1q_2}{r^2} + \frac{4kq_1q_2}{r^2} = \frac{5kq_1q_2}{r^2}$$

$$F_r = \frac{kq_1q_2}{r^2} + \frac{4kq_1q_2}{r^2} = \frac{134kq_1q_2}{r^2} \quad \frac{134}{4} = 33.5$$



$$\Delta U = -\Delta K$$

در بارهای متغیر

$$\Delta V = V_f - V_i = 10 - 2 = 8$$

$$-9\Delta V = \frac{1}{2} \times 10^{-3}$$

(۳) - ۱۸۱

$$C = \epsilon \frac{A}{d}$$

$$\frac{C_f}{C_i} = \frac{\epsilon_f}{\epsilon_i} = \frac{1}{2}$$

(۱) - ۱۸۲

$$V = \frac{q}{C} \Rightarrow \frac{V_f}{V_i} = \frac{C_i}{C_f} = 2$$

$$U = \frac{q^2}{2C} \rightarrow \frac{U_f}{U_i} = \frac{C_i}{C_f} = 2$$

$$I = \frac{\epsilon}{R_T}$$

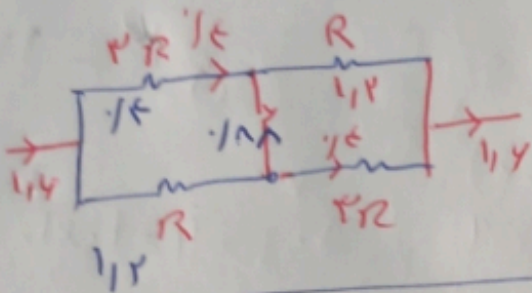
$$I_{12} = \frac{\epsilon}{2R}$$

قبل از وصل سلف

(۴) - ۱۸۴

$$\epsilon = 2I\epsilon R$$

$$I' = \frac{\epsilon}{R_T} \Rightarrow I' = \frac{2I\epsilon R}{\frac{2}{3}R} = 1.4$$

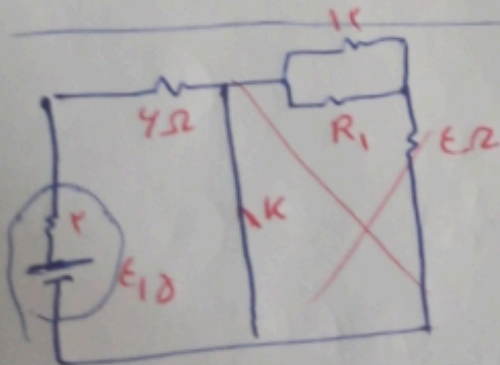


(۱) - ۱۸۵

$$I = \frac{\epsilon_1 - \epsilon_2}{R_T + r}$$

$$R \downarrow I \uparrow P \uparrow$$

(۱) - ۱۸۵



با سلف سلف متساوی  
حذف سلف

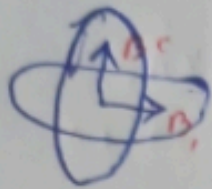
$$I_4 = 2I_4 \Rightarrow V_4' = 2V_4$$

$$\frac{\epsilon}{R_T' + r} = 2 \frac{\epsilon}{R_T + r} \rightarrow R_T + r = 2(R_T' + r)$$

$$\frac{1 \times R_1}{R_1 + 1} + 1 = 2(1) \rightarrow R_1 = 4$$

(۵) - ۱۸۶

$B = \mu_0 N I \sin \theta = 14 \times 10^{-7} \times 20 \times 10^3 \times \frac{1}{2} = 1.4 \times 10^{-2} \text{ T}$   
 $\theta = 30^\circ$

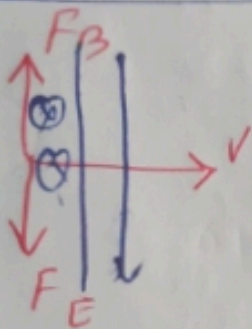


$$B_T = \sqrt{B_1^2 + B_2^2}$$

$$\frac{B_2}{B_1} = \frac{I_2}{I_1} \times \frac{R_1}{R_2} = \frac{r}{c}$$

$$B_T = \frac{\partial}{\partial t} B_1 = \frac{r}{14} \left( \frac{\epsilon_0 \mu_0 \cdot v \times r}{r \times r \times \partial x \cdot r} \right)$$

$$B_T = \frac{\partial}{\partial t} \left( \frac{\epsilon_0 \mu_0 \cdot v \times r}{r \times r \times \partial x \cdot r} \right) = \epsilon_0$$



$$F_E > F_B$$

$$qE > qvB$$

$$v < \frac{E}{B} = \frac{1.00}{1.1} = 0.91$$

$$B = \frac{\mu_0 N I}{L}$$

$$\frac{B_A}{B_B} = \frac{N_A}{N_B} \times \frac{L_B}{L_A} = 1$$

$$L = \frac{k \mu_0 N^2 A}{L}$$

$$\frac{L_A}{L_B} = \left( \frac{N_A}{N_B} \right)^2 \times \frac{L_B}{L_A} = 2$$

$$(19) - 191$$

$$K = \frac{1}{2} m v^2 = \frac{1}{2} (9.1 \times 10^{-31}) (1.6 \times 10^6)^2$$

$$(20) - 192$$



(10) - 19E

$$P = \rho g h$$

$$P_1 V_1 = P_2 V_2$$

$$P_1 A h_1 = P_2 A h_2 \rightarrow \rho g h_1 A h_1 = \rho g h_2 A h_2$$

$$P_1 = P_2 + \rho g h_2 = \rho g h_1 \Rightarrow h_2 = 1.5 \text{ m}$$

$$P_2 = P_1$$

$$H = \frac{k A \Delta \theta}{L}$$

$$\frac{H_2}{H_1} = \frac{r}{\omega}, \frac{\Delta H}{H_1} = -\frac{r}{\omega}$$

(11) - 19D

$$\Delta V = V_1 (r \alpha) \Delta \theta$$

$$\frac{\Delta V}{V_1} = r \alpha \Delta \theta = 1.0 \times 1.0 \times 1.0 = 1.0$$

(12) - 19F

$$PV = nRT \quad P_1 = P_2$$

$$\frac{V_1}{V_2} = \frac{n_1}{n_2} \times \frac{T_1}{T_2} \rightarrow \frac{n_1}{n_2} = \frac{V_2}{V_1} \times \frac{T_2}{T_1}$$

$$n = \frac{m}{M} \rightarrow \frac{n_1}{n_2} = \frac{m_1}{m_2} \times \frac{M_2}{M_1}$$

$$\rightarrow \frac{m_2}{m_1} = 1.0$$

(13) - 19G

$$K = \frac{T_H}{T_H - T_L} \Rightarrow \frac{1}{\epsilon} = \frac{T_H}{T_H - T_L} \Rightarrow \frac{T_H}{T_L} = \frac{1}{\epsilon}$$

$$\frac{\Delta T_H}{T_L} = \frac{1}{\epsilon}$$

(14) - 19H



199

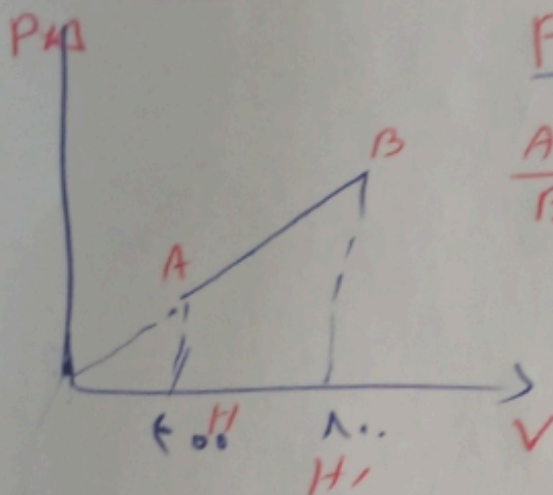
$$Q_{ca} = -200 \text{ J}$$

$$\Delta U_{ca} = -200 = Q_{ca} + W_{ca}$$

$$\Delta U_{ca} = \Delta U_{ab} + \Delta U_{cb}$$

$$\Delta U_{ab} = -1 \text{ kJ} \rightarrow 200 = -\frac{1}{2} W \rightarrow W = -400$$

200



$$\frac{P_1 V_1}{T_1} = \frac{P_2 V_2}{T_2}$$

$$\frac{A H}{B H'} = \frac{E_{00}}{A_{00}} = \frac{P_1}{P_2} = \frac{1}{2}$$

$$\frac{P_1 V_1}{T_1} = \frac{P_2 V_2}{T_2}$$

$$\frac{E_{00}}{273-273} = \frac{2 \times 100}{T_2} \rightarrow T_2 = 1000$$

$$Q_2 = 427 \quad T = 273 + 0$$

صوفق با سید

ذاری سب دسریزید دسریزید دسریزید  
و طالعانی