

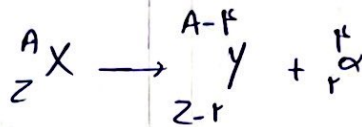
نوین کنکور

کنکور

امتحان نهایی

**نوین کنکور
شرط لازم و کافی
برای موفقیت**

novinkonkor.com



(۲) ~ (۴۱)

$$q_1 > 0 \quad ; \quad |q_1| > |q_2|$$

$$q_2 < 0$$

(۳) ~ (۴۲)

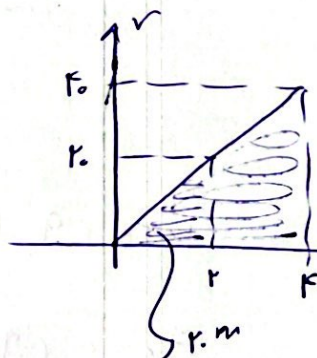
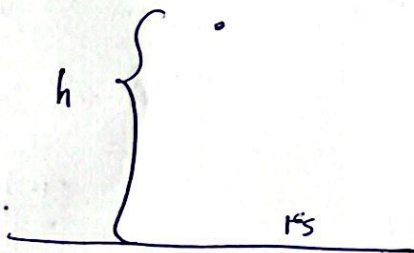
(۱) ~ (۴۳)

$$P \omega k \omega \cdot h = P \omega (10^3) (2400) J$$

(۲) ~ (۴۴)

$$\rightarrow \frac{P \omega (10^3) (24)}{10^4} = 90 MJ$$

(۴) ~ (۴۵)



$$\bullet \quad < t < r \rightarrow r \cdot m = L$$

$$\bullet \quad < t < r \rightarrow L \cdot m = L_r$$

$$L_r - L_1 = r \cdot m$$

(۱)

$$a_1 = 10 m/s^2$$

$$v_0 = 0$$

$$v = 10 \frac{m}{s}$$

$$x_1 = 0$$

$$x_2 = 10 \frac{m}{s}$$

(۱) ~ (۴۶)

$$a_2 = 2 m/s^2$$

$$v_0 = 0$$

$$x_1 = 0$$

$$x_2 = 2 m/s^2$$

$$v_1 = v_2 \rightarrow 10t + 10 = 2t \rightarrow t = 1.5$$

$$x_1 = x_2 \rightarrow \frac{1}{2} t^2 + 10t + 10 = t^2$$

$$\rightarrow t = 2.5$$

$$\Delta t = 2.5 - 1 = 1.5$$

$$v_A = \frac{y}{c} = \frac{2m}{5}$$

(۴) (۴۷)

$$t = 5s \rightarrow x_A = x_B \rightarrow r_1 t + r_0 = \frac{1}{r} a t^2 + v_0 t + x_0$$

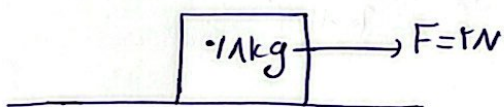
$$\rightarrow r_1 = 1a + r_1 + 0 \rightarrow a = -r_1 \omega \frac{m}{5^2}$$

$$v = ct^2 - 1 \rightarrow a = 4t$$

(۱) (۴۸)

$$2 < t < 4 \xrightarrow{t=5s} a_{av} = 4(5) = 18 m/s^2$$

$$v_0 = -\omega \frac{m}{5}$$



$$\frac{r}{F_{net}} = \frac{1}{ma} \rightarrow a = r_1 \omega m/s^2$$

(۳) (۴۹)

$t = 2s$
 تا زمان توقف
 $t = 5s$
 لحظه برگشت
 به $\omega \frac{m}{5}$
 ابتدا (۲) در $t=0$



$$T = m(g - |a|)$$

(۴) (۵۰)

$$F_{ce} = m_0(9.8 - |a|) \rightarrow |a| = 1.2 m/s^2$$

$$F_{net} = ma \rightarrow F = m_1(12) = m_2(4) \rightarrow m_2 = 3m_1$$

(۱) (۵۱)

$$\frac{12m_1}{F} = (m_2 - m_1)a = 2m_1a \rightarrow a = 4 m/s^2$$

استاد: مجتبیٰ نکونیان

پاسخ تشریحی فیزیک رشته ریاضی

$$T = \frac{2\pi R}{v} \quad \rightarrow \quad \omega = \frac{2\pi}{T} = \frac{2(2\pi R)}{2\pi R} = 4 \text{ rad/s} \quad (2) \quad (22)$$

$$\frac{\mu_s mg}{\phi_{\text{static}}} = \mu_s r \omega^2 \quad \rightarrow \quad \mu_s (10) = \frac{1}{16} (24)$$

$$\rightarrow \mu_s = 724$$

$$m_A = m_B \quad \xrightarrow{P_A = P_B} \quad v_A = v_B \quad \xrightarrow{A_A = r_{AB}} \quad \frac{L_A}{L_B} = \frac{1}{4} \quad (23)$$

$$v = \sqrt{\frac{FL}{m}} \quad \rightarrow \quad \frac{v_A}{v_B} = \sqrt{\frac{F_A}{F_B} \times \frac{L_A}{L_B} \times \frac{m_B}{m_A}}$$

$$\rightarrow \frac{100}{v_B} = \sqrt{\frac{1}{4}} = \frac{1}{2} \quad \rightarrow v_B = 200 \frac{\text{m}}{\text{s}}$$

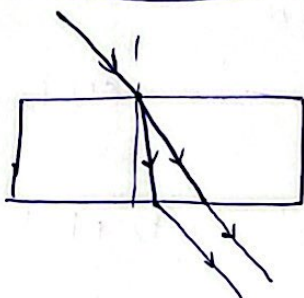
$$(24) \quad (24)$$

$$mg = k \Delta x \quad \rightarrow r = k \left(\frac{r_1 \omega}{100} \right) \quad \rightarrow k = 1.0 \frac{\text{N}}{\text{m}}$$

$$A = 2 \text{ cm} \quad \rightarrow k_m = E = \frac{1}{2} k A^2 = \frac{1}{2} (10) (2 \times 10^{-2})^2 = 14 \text{ mJ}$$

$$(25) \quad (25)$$

$$(26) \quad (26)$$



$$\uparrow \quad \uparrow$$

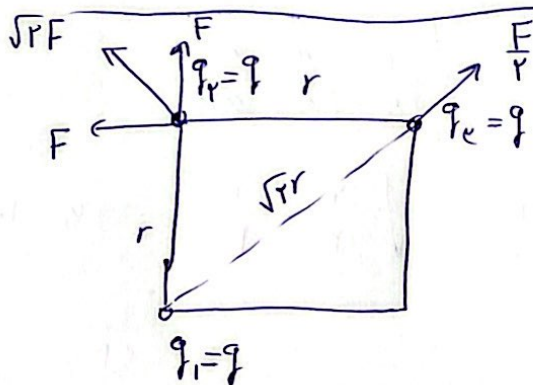
$$k_m = h \phi - \omega_0$$

① (51)

② (59)

$$N = \frac{N_c}{r^n} = \frac{N_c}{14} \rightarrow n = 4 = \frac{t}{T_{hr}} \quad \text{④ (40)}$$

$$\rightarrow T_{hr} = 2 \text{ hr}$$



$$\frac{F}{r} \rightarrow F$$

$$\frac{\sqrt{2}F}{\frac{F}{r}} = r\sqrt{2}$$

⑤ (41)

$$\frac{e}{C} = \frac{k \epsilon \cdot A}{d}$$

$$E = \frac{V}{d}$$

$$u = \frac{1}{f} c v r$$

⑥ (42)

①

$$I = \frac{11-4}{9} = 2A$$

$$P_i = e_i I - r_i I^2 = 24 - (1)(4) = 20 \text{ W}$$

$$P_{r_{\text{وچ}}\text{وچ}} = e_r I + r I^2 = 4(2) + 2(4) = 20$$

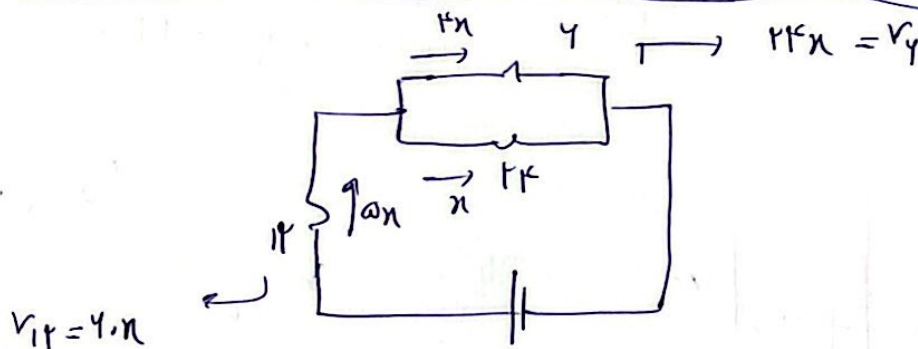
⑦ (43)

$$\frac{P_r}{P_i} = \frac{\omega}{\lambda}$$

$$R = \frac{\rho L}{A} = \frac{\rho \pi r^2 d}{m} \quad \text{کمالی}$$

(۲۴)

$$\rightarrow \frac{R_A}{R_B} = 1 \times 1 \times 1 \times 1 = 1$$



(۲۵)

$$\frac{V_{12}}{V_2} = \frac{4x}{2x} = 2$$

(۲۶)

$$B = \frac{\mu_0 NI}{\ell} \rightarrow 10^{-4} \text{ T} = \frac{(4\pi \times 10^{-7}) N (1 \text{ A})}{10^{-1}} \quad (۲۷)$$

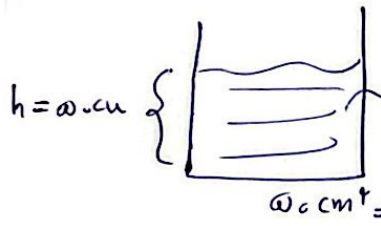
(۲۸)

$$\rightarrow N = 1000$$

$$\Phi = B A \cos \theta = (10^{-4} \text{ T}) (1 \text{ m}^2) (1) = 10^{-4} \text{ Wb} \quad (۲۹)$$

$$\Phi = 0 \rightarrow \Delta \Phi = -10^{-4} \text{ Wb} \quad (۳۰)$$

(۲) (۲۹)

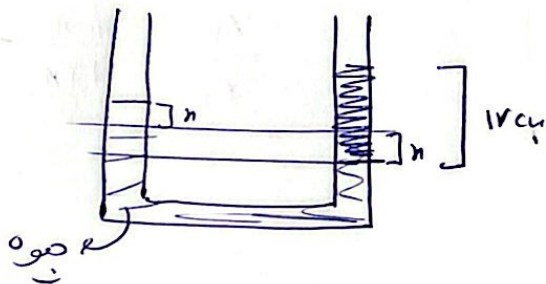


$$h = 50 \text{ cm} \quad \left\{ \begin{array}{l} 1000 \text{ cm}^3 = V \\ V = Ah \rightarrow h = 50 \text{ cm} \end{array} \right.$$

$$(\rho h)_{\text{جوہ}} = (\rho h)_{\text{جوہ}} \rightarrow 1.2(50) = 1.2(4) h_2$$

$$\rightarrow h_2 \approx 1.25 \text{ cm}$$

(۱) (۷۰)



$$(\rho h)_{\text{جوہ}} = (\rho h)_{\text{جوہ}}$$

$$(1.2)(4) = 2(1.2)$$

$$\rightarrow x = 1.25 \text{ cm}$$

$$W_t = \Delta k = \frac{1}{2} m (v_B^2 - v_A^2) \quad ; \quad v_A = 40 \frac{\text{m}}{\text{s}}$$

$$\rightarrow 24000 = \frac{1}{2} (40) (v_B^2 - 1220)$$

$$\rightarrow v_B^2 = 2.20 \rightarrow v_B = 40 \frac{\text{m}}{\text{s}} = 142 \frac{\text{km}}{\text{h}}$$

(۷۱)

(۴)

استاد: مجتبیٰ نکوئیان

پاسخ تشریحی فیزیک رشته ریاضی

۱) : بر

$$\frac{k_1}{k_2} = \frac{m_1}{m_2} \times \left(\frac{v_1}{v_2}\right)^2$$

⑤ ~ (۷۲)

۲) : ح

$$\frac{1}{r} = 2 \times \left(\frac{v_1}{v_2}\right)^2 \longrightarrow \frac{v_1}{v_2} = \frac{1}{r}$$

$$v'_1 = v_1 + 2 \longrightarrow k'_1 = k_2$$

$$\longrightarrow 1 = 2 \times \left(\frac{v_1 + 2}{2v_1}\right)^2 \xrightarrow{\text{جذر}} \frac{1}{\sqrt{2}} = \frac{v_1 + 2}{2v_1}$$

$$\longrightarrow 2v_1 = \sqrt{2}v_1 + 2\sqrt{2} \longrightarrow (2 - \sqrt{2})v_1 = 2\sqrt{2}$$

$$\longrightarrow v_1 = \frac{2\sqrt{2}}{2 - \sqrt{2}} \frac{m}{s}$$

② ~ (۷۳)

$$\frac{p_1 v_1}{n_1 T_1} = \frac{p_2 v_2}{n_2 T_2} \quad \frac{p_1 = p_2}{v_1 = v_2} \longrightarrow \frac{1}{n_1 T_1} = \frac{1}{n_2 T_2}$$

① ~ (۷۴)

$$\longrightarrow \frac{1}{296 n_1} = \frac{1}{298 n_2} \longrightarrow n_2 = \frac{296}{298} n_1$$

$$\Delta n = \frac{1}{298} n_1$$

⑤ ~ (۷۵)

④) موطر منفرجه را رسم کن

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