

نوین کنکور

کنکور

امتحان نهایی

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

novinkonkor.com

① - ۴۶

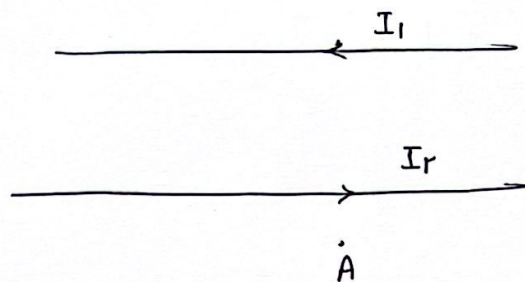
$$[P] = \frac{J}{s} = \frac{kg \cdot m^2}{s^2}$$

$$I = r \sin(\omega \cdot \pi t)$$

⑤ - ۴۷

$$\underline{t = 2 \times 10^{-5}} \quad I = r \sin(\omega \cdot \pi \times 2 \times 10^{-5}) = r \sin\left(\frac{\pi}{2}\right) = rA$$

④ - ۴۸



برای دو سیم و نزدیک به هم قرار گرفته

$$I_2 < I_1$$

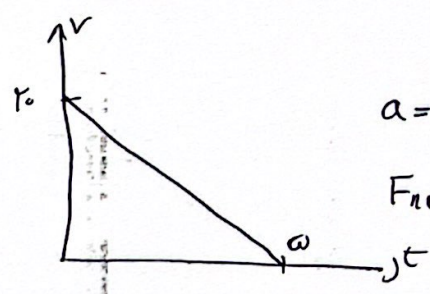
② - ۴۹

$$\frac{W_2}{W_1} = \frac{g_2}{g_1} = \left(\frac{r_1}{r_2}\right)^2 = \left(\frac{44.0}{100.0}\right)^2 = \left(\frac{44}{100}\right)^2$$

④ - ۵۰

$$\rightarrow W_2 = (200) \cdot \frac{(44)(44)}{100(100)} = 1.24 N$$

① - ۵۱



$$a = -r \omega^2$$

$$F_{net} = ma = 1.0(-4) = -4.0 N$$

$$|F_{net}| = 4.0 N$$

۵۲ - ۲

$$\frac{I_2}{I_1} = \left(\frac{r_1}{r_2}\right)^2 \rightarrow \frac{I_2}{1} = \left(\frac{4\text{cm}}{14\text{cm}}\right)^2 = 14$$

$$\rightarrow I_2 = 14 \frac{\text{W}}{\text{m}^2}$$

۵۳ - ۳

$$\lambda = 2\text{cm} = 0.02\text{m}$$

$$A = \omega \text{cm}$$

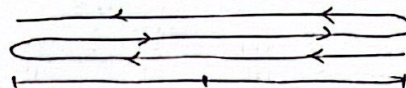
$$\lambda = v \cdot T \rightarrow \frac{1}{\omega} = 10 \cdot T \rightarrow T = \frac{1}{\omega} \text{s}$$

$$\frac{t}{T} = \frac{\frac{1}{10}}{\frac{1}{\omega}} = \frac{1}{10} \rightarrow L = 2A = 10\text{cm}$$

۵۴ - ۲

$$T = \frac{2\pi}{\omega} = \frac{1}{\omega} \text{s} ; A = 2\text{cm}$$

$$\frac{t}{T} = \frac{1}{\frac{1}{\omega}} = \omega$$



$$|v_{\text{osc}}| = \frac{\Delta y}{\Delta t} = \frac{v}{\frac{1}{f}} = 1 \frac{\text{cm}}{\text{s}}$$

۵۵ - ۳

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

$$L = 2A ; s_{\text{av}} = \frac{L}{\Delta t} \rightarrow 2f = \frac{2A}{\frac{1}{f}} = 1A \rightarrow A = 2\text{cm}$$

$$\frac{\frac{v}{f}}{\frac{1}{f}} = \frac{v}{f}$$

$$\rightarrow |\Delta y| = 2A = 4\text{cm}$$

۴۷ - ۴۸

$$N = \frac{N_0}{r^n} = \frac{1}{\lambda} N_0 \rightarrow n=2$$

$$n = \frac{t}{T_{1/2}} \rightarrow 2 = \frac{24}{T_{1/2}} \rightarrow T_{1/2} = 12 \text{ day}$$

$$hf = (r_1 \omega \times 10^{-15}) (r_2 \times 10^{-15}) = 1.04 \text{ eV} = E_2 - E_1$$

۴۷

۴۸

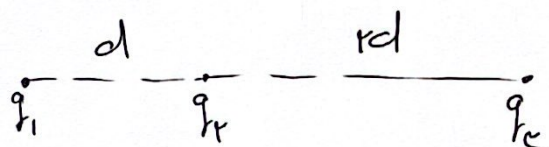
۱ از ۲ به ۱

۴۹ - ۵۰

$$\frac{1}{\lambda} = R \left(\frac{1}{n_1^2} - \frac{1}{n_2^2} \right)$$

$$\rightarrow \frac{1}{\lambda} = \frac{1}{100} \left(\frac{1}{14} - \frac{1}{49} \right) \rightarrow \lambda \approx 410.2 \text{ nm}$$

۵۱ - ۵۲



$$\text{حالت } q_c: \frac{|q_r|}{r_{dr}^2} = \frac{|q_1|}{r_{d1}^2} \xrightarrow{\text{چون } q_r \text{ و } q_1 \text{ هم‌نامند}} \frac{q_r}{r_1} = -\frac{r}{q}$$

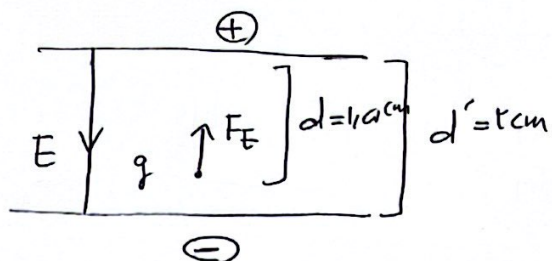
۵۳ - ۵۴

$$\begin{aligned} q_1 &= 1 \text{ nC} & q_2 &= 4 \text{ nC} \\ \text{حالت } q_1: & E_1 = \frac{q_2 \times 10^9 (1)}{4(9)} = 2.5 \times 10^4 \frac{N}{C} \\ & E_2 = \frac{q_2 \times 10^9 (4)}{9} = 10 \times 10^4 \frac{N}{C} \end{aligned}$$

$$\text{حالت ۱: } E_r = 2.5 \times 10^4 \frac{N}{C} \rightarrow 2.5 \times 10^4 = \frac{q_2 \times 10^9 |q_r|}{4(9)} \rightarrow q_r = -1 \text{ nC}$$

$$\text{حالت ۲: } E_r = 1 \times 10^4 \frac{N}{C} \rightarrow 1 \times 10^4 = \frac{q_2 \times 10^9 |q_r|}{4(9)} \rightarrow q_r = -0.4 \text{ nC}$$

۴۱



$$E = \frac{|\Delta V|}{d} = \frac{2.0}{2 \times 10^{-2}} = 1.0 \times 10^2 \frac{V}{m}$$

$$\Delta U = -E |q| d = -1.0 \times 10^2 (1.0 \times 10^{-6}) (2.0 \times 10^{-2}) = -2.0 \times 10^{-4} J$$

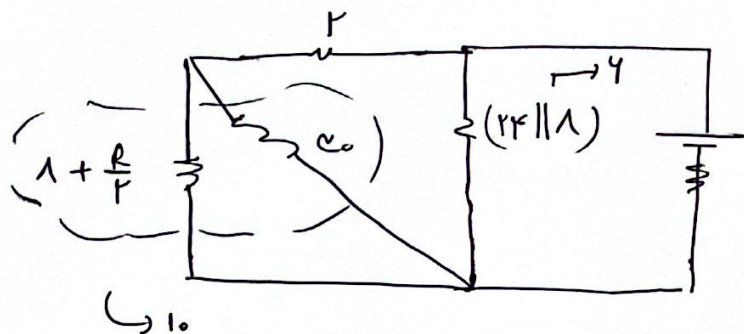
$$R = \frac{\rho L}{A} = \frac{(1.0 \times 10^{-8}) (1.0 \times 10^{-2})}{1.0 \times 10^{-4}} = 1.0 \Omega$$

۴۲

$$\frac{12}{V_{\text{مولد}}} = \frac{1A}{\epsilon} - rI \rightarrow I = \epsilon A$$

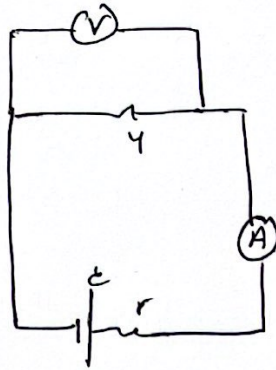
۴۳

$$I = \frac{\epsilon}{R_{eq} + r} \rightarrow \epsilon = \frac{1A}{R_{eq} + r} \rightarrow R_{eq} = 2 \Omega$$



$$1 + \frac{R}{r} = 10 \rightarrow R = 9r = 18 \Omega$$

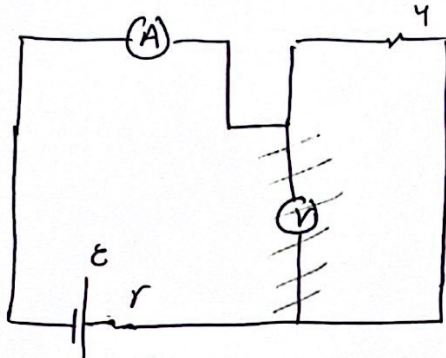
حالت ۱:



$$I_1 = \frac{\varepsilon}{Y+r} = \frac{24}{Y+r}$$

$$V_1 = \frac{Y(24)}{Y+r}$$

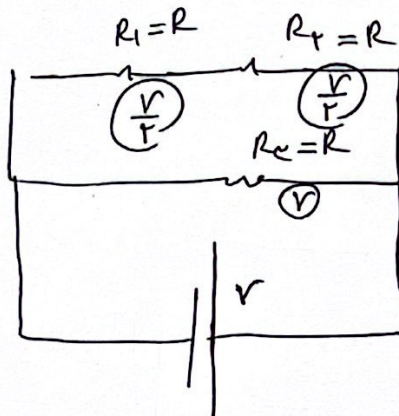
حالت ۲:



$$I_2 = \frac{\varepsilon}{Y+r} = \frac{24}{Y+r}$$

$$V_2 = \frac{Y(24)}{Y+r}$$

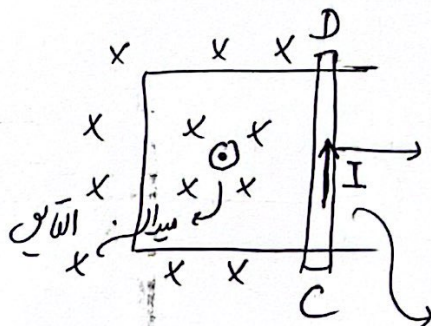
$$\rightarrow I_1 = I_2 \text{ و } V_1 = V_2$$



$$V_3 = V$$

$$V_1 = V_2 = \frac{V}{2}$$

$$P = \frac{V^2}{R} \rightarrow P_3 > P_1 = P_2$$



بنا موجب ہے قانون انڈکشن

$$|\varepsilon| = \frac{N |\Delta \Phi|}{\Delta t} = \frac{N B l v}{\Delta t}$$

$$|\varepsilon| = (1) (2 \times 10^{-5}) \left(\frac{1}{2} \right) (1) = 1 \text{ mV}$$

(۴۷)

$$P_A = \rho g h_1 + \rho g h_2 + P_0$$

$$\rightarrow 2 \times 10^4 = \rho g (h_1 + h_2) \rightarrow 2 \times 10^4 = \rho (10) (1.4)$$

$$\rightarrow \rho = 1400 \text{ kg/m}^3 = 1400 \frac{\text{g}}{\text{Lit}}$$

(۴۸)

$$W_t = \Delta K = \frac{1}{2} m (v_B^2 - v_A^2)$$

$$v_A = 10 \frac{\text{m}}{\text{s}}$$

$$17 W_{\text{...}} = \frac{1}{2} (1000) (v_B^2 - 220)$$

$$\rightarrow v_B^2 = 400 \rightarrow v_B = 20 \frac{\text{m}}{\text{s}} = 72 \frac{\text{km}}{\text{h}}$$

(۴۹)

$$\Delta L = \alpha L_1 \Delta \theta$$

$$\rightarrow \Delta L = (1.4 \times 10^{-5}) (20) (20) = 1.4 \text{ mm}$$

(۵۰)

$$Q = (mc \Delta \theta)_{\text{...}} + m L_f + (mc \Delta \theta)_{\text{...}}$$

$$C_{\text{...}} = C$$

$$= (2) \left(\frac{1}{2} C \right) (10) + (2) (100) + 2C (100) = 210C$$

$$= 210 (418) = 10994 \text{ kJ}$$

7

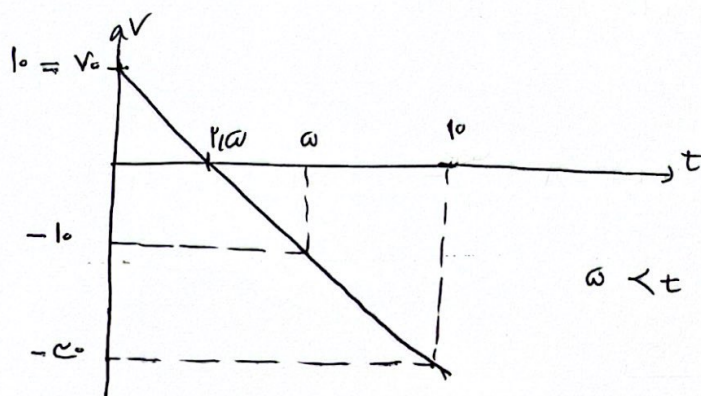
صفحه

استاد: مجتبی نکوئیان

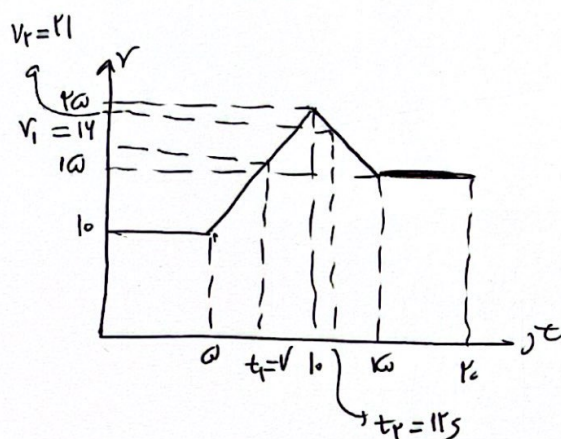
پاسخ تشریحی فیزیک رشته تجربی

(K)

(VI)

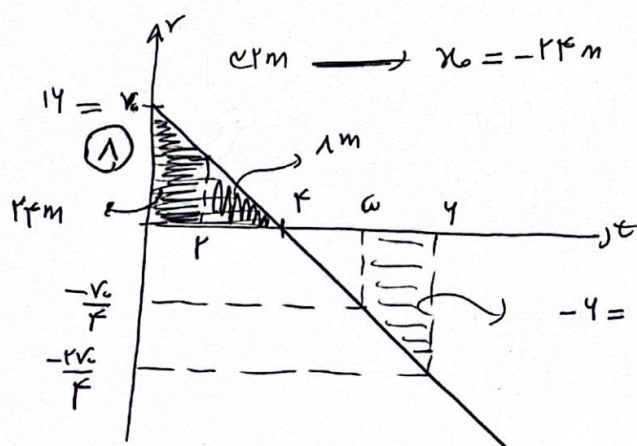


$$\omega < t < 10 \rightarrow S_{av} = \frac{10 + (-20)}{2} = -5 \text{ m/s}$$



$$v_{av} = \frac{\Delta v}{\Delta t} = \frac{21 - 14}{15} = 1 \text{ m/s}$$

(C) (Vc)

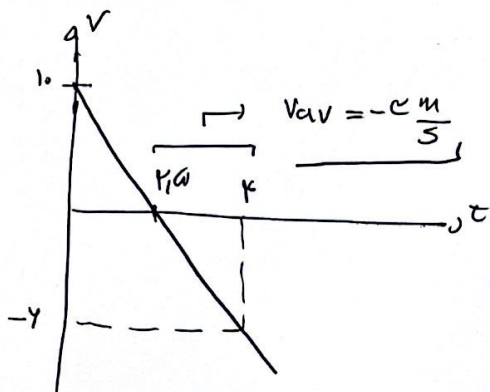


$$-4 = \frac{-14 - v_0}{2} \rightarrow v_0 = 14 \text{ m/s}$$

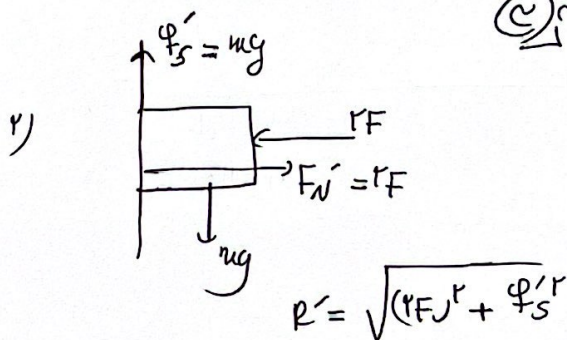
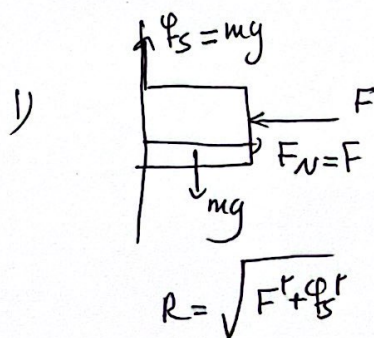
$$v = -4t + 10 \rightarrow t = 2.5 \text{ s}$$

لحظه تغییر جهت حرکت

$$x = -2t^2 + 10t - 8 = 0 \rightarrow t_1 = 1 \text{ s} \text{ و } t_2 = 4 \text{ s}$$



لحظه تغییر جهت برابری



$$F_N' = 2F_N$$

$$N_S = N_S = mg$$

$$R < R' < 2R$$

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