

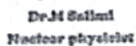
نوین کنکور

کنکور

امتحان نهایی

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

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Department of Physics, Iowa Institute of Nuclear Research

دکتر مهرداد سلیمی - متخصص فیزیک هسته ای



میرزا رسول، راجی میرزا - نور دی ۱۴۱۰ - مسجد مسیحی دی


 ۲۰۰۰ - ۱۰۰۰

$$\mu \otimes \nu \in \mathcal{P}(\mathbb{R}^2) - \mathcal{P}(\mathbb{R}) \otimes \mathcal{P}(\mathbb{R})$$

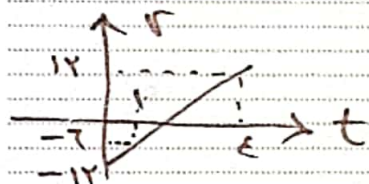
2 μ ϵ ϵ

3-2-20

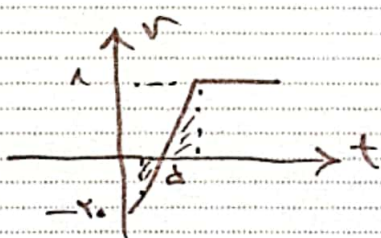
$$x = r + r - r + a$$

$$\frac{1}{r}a = r \Rightarrow a = r$$

$$v = at + v_0 \Rightarrow v = 9t - 12 = 0 \Rightarrow t = 1.5$$



$$S = \frac{r + 1r}{r} = 2 \frac{m}{s}$$



$$\frac{r_0}{d} = \frac{1}{tr - \alpha} \left(\frac{\epsilon}{\sigma} - \frac{\epsilon_0}{\sigma} \right)$$

$$\rightarrow t_y = v_1 \sigma S$$

از طرفی: $\frac{18}{8} = \left(\frac{t}{2}\right)^2 \Rightarrow t = 3s$

$T = 1.25$: زمن لازم برای جابجایی با جریته ملوفا

$$t_{vis} = (t_r - t_1) + T = \tau_{ros}$$



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$$\frac{v_0=0}{\Delta x} \rightarrow \Delta x = \frac{1}{2} a t^2 \Rightarrow 32 = \frac{1}{2} a \times 16 \Rightarrow a = 4 \frac{m}{s^2}$$

$$\frac{v_0=0}{\text{از طرفی}} \rightarrow v^2 - 0^2 = 2a \Delta x \Rightarrow \Delta x = 450m$$

$$y = \frac{1}{2} g t^2 + v_{g0} t$$

$$90 = 45 + v_{g0} t \Rightarrow v_{g0} = 15 \frac{m}{s}$$

$$v^2 - v_{g0}^2 = 2gY \rightarrow v^2 - 225 = 20 \times 140 \Rightarrow v = 55 \frac{m}{s}$$

با فرض حرکت از انحنای به سمت بالا:

$$Y' = -\frac{1}{2} g t^2 + v t \Rightarrow Y' = -5 \times 9 + 11 \times 2 = 120m$$

$$F = kx = mg \Rightarrow x = \frac{mg}{k} = \frac{10}{5} = 2,2cm$$

$$F - f_k mg = ma \quad : \text{قانون دوم نیوتن}$$

$$12,2 - 2 = 2a \Rightarrow a = 5,1 \frac{m}{s^2}$$

$$F - f_k mg = 0 \Rightarrow F = 12,2N \quad : \text{قانون اول نیوتن}$$

$$-f_k = ma \Rightarrow -f_k mg = ma \Rightarrow f_k = 1,2$$

$$\rightarrow v^2 - v_0^2 = 2a \Delta x$$

$$a = \frac{-v_0^2}{2 \Delta x} \Rightarrow a = -2 \frac{m}{s^2}$$





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$$\left(\frac{T_A}{T_B}\right)^2 = \left(\frac{r_A}{r_B}\right)^3 \Rightarrow \frac{1}{\pi} = \left(\frac{r_A}{r_B}\right)^2 \Rightarrow \frac{r_A}{r_B} = \frac{1}{\sqrt{\pi}} \quad \frac{r}{\pi} : \frac{dr}{d\pi}$$

$$\frac{a_B}{a_A} = \frac{r_B}{r_A} \left(\frac{T_A}{T_B}\right)^2 = 2 \times \frac{1}{\pi} = \frac{1}{\pi}$$

$$\frac{r}{\pi} : \frac{dr}{d\pi}$$

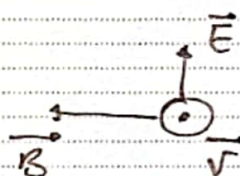
$$K_{\text{mag}} = \frac{1}{2} m A^2 \omega^2 = \frac{1}{2} \times 1.6 \times 10^{-27} \times (2\pi \times 10^8)^2 = 6.4 \times 10^{-18} \text{ J}$$

$$\left(\frac{r_A}{r_B}\right)^2 = \left(\frac{10\pi}{\pi}\right)^2 = 100 \times \pi = 100\pi$$

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

$$\frac{r}{\pi} : \frac{dr}{d\pi}$$

$$\omega = 2\pi \quad \text{و:} \quad \omega = \frac{2\pi}{T} \quad \text{و:} \quad T = 10^{-8} \text{ s}$$



$$\frac{r}{\pi} : \frac{dr}{d\pi}$$

$$n = \frac{c}{v} \quad \lambda = \frac{c}{f} \quad \text{or} \quad \lambda = \frac{v}{f} \quad n = \frac{c}{\lambda f} = \frac{3 \times 10^8}{6.4 \times 10^{-9} \times 2 \times 10^8}$$

$$n = \frac{100}{1.6} \Rightarrow n = \frac{6.25}{1.6}$$

$$\lambda = \lambda_1 - \lambda_2$$



$$\frac{3 \times 10^8}{6.4 \times 10^{-9}} = 4.6875 \times 10^{16} \text{ m}$$

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$$v = \sqrt{\frac{F}{\mu}} \quad v = \lambda f \quad \lambda f = \sqrt{\frac{F}{\mu}} = \sqrt{\frac{F}{\rho A}} \quad f = \frac{v}{\lambda}$$

$$v \lambda = \dots = \dots \Rightarrow A = 3 \text{ mm}^2$$

$$\pi r^2 = 3 \text{ mm}^2$$

$$r = 1 \text{ mm}$$

$$d = 2 \text{ mm}$$

$$k_{\max} = h(f - f_0)$$

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

$$\frac{1}{2} m v^2 \quad eV = 12 \times 10^{-15} (f - 1.5 \times 10^{15})$$

$$\frac{1}{2} \times 1.5 \times 10^{-15} = f - 1.5 \times 10^{15} \Rightarrow f = 1.575 \times 10^{15} \frac{1}{s}$$

$$E = hf = \frac{hc}{\lambda} = \frac{1240}{\lambda} \Rightarrow E = \frac{1240}{\lambda}$$

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

or

$$\lambda = \frac{1240}{E}$$

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



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$$\nu = \frac{\nu_0}{n} \Rightarrow 1.5 = \frac{1}{n} \Rightarrow n = 2$$

فرکانس

$$n = \frac{r_1}{r} \Rightarrow r = 2 \text{ دانه}$$

$$\nu' = 11.5\% = \frac{1}{8} = \frac{1}{2^3} \Rightarrow n = 3 \Rightarrow t_2 = 2 \text{ دانه}$$

$$t_2 - t_1 = 2 - 1 = 1 \text{ دانه}$$

$$\begin{cases} E_1 = \frac{9 \times 10^{-19} \times 1.5 \times 10^{-6}}{9 \times 10^{-31} \times 1.5 \times 10^{-6}} = 1.5 \times 10^{-6} \text{ J} \\ E_2 = \frac{9 \times 10^{-19} \times 1.5 \times 10^{-6}}{9 \times 10^{-31} \times 1.5 \times 10^{-6}} = 1.5 \times 10^{-6} \text{ J} \end{cases}$$

$$\alpha = 90^\circ \quad E_T = \sqrt{E_1^2 + E_2^2} = 1.5 \times 10^{-6} \text{ J}$$

$$\sigma_2 \frac{q}{A} \Rightarrow \frac{\sigma_A}{\sigma_B} = \frac{q_A}{q_B} \times \frac{A_B}{A_A} = 2 \times \frac{1}{2} = 1$$

$$\frac{q_1}{r_1^2} = \frac{q_2}{(10 - r_1)^2} \Rightarrow r_1 = 5 \text{ cm}$$

$$\frac{P_B}{P_0} = \frac{2 \times 1.9 \times 10^{-2}}{2 \times 10^{-2}} = 1$$



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نلیدگ وصل

$$I = \frac{\mathcal{E}}{RT} = \frac{15}{\frac{15}{2}} = 2A$$

$$I_1 = I_2 = 1A \quad \text{از طرف:}$$

$$I' = \frac{12}{2} = 2A \quad \mathcal{E}: \mathcal{R}$$

$$I_{1\odot} = 2A \quad I_{2\odot} = 1A$$

$$\Rightarrow \frac{I_{1\odot}}{I_1} = 2, \quad \frac{I_{2\odot}}{I_2} = 1$$

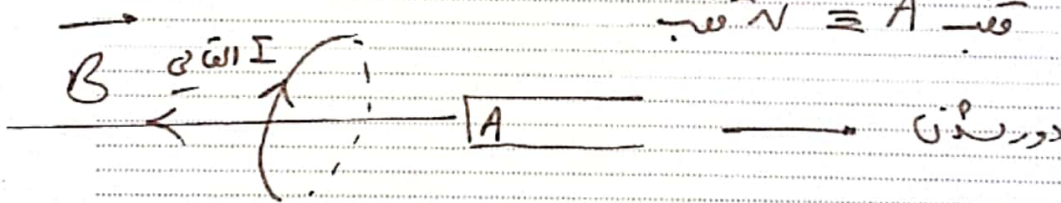
$$B = \frac{\mu_0 N I}{l} \Rightarrow \frac{B_1}{B_2} = 1$$

$$L = \frac{\mu_0 A N^2}{l} \Rightarrow \frac{L_1}{L_2} = 2$$

$$A \rightarrow 1 \quad \mathcal{R}: \mathcal{R}$$

$$B \rightarrow 2$$

$$N \equiv A \quad \mathcal{R}: \mathcal{R}$$



$$I = -\frac{200}{12} \frac{100 \times 10^{-2} - 10^{-2}}{1} = 2A$$

$$\frac{1.71 \times 10^{-2} - 1.03 \times 10^{-2}}{1} = 2 \Rightarrow \rho_2 = 1.32 \times 10^{-2} = 1.32 \times 10^{-2}$$

$$\frac{\Delta F}{mg} = \frac{100}{2} = 50$$



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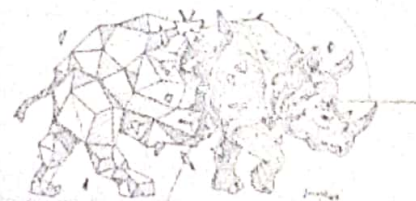




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$$Pv = nRT$$

معادله حالت گاز ایده آل

$$\frac{P}{T} = \frac{nR}{V}$$

$$P_A V_A = 2,5 \times 2,2$$

$$P_B V_B = 2,5 \times 2,2$$

$$P_C V_C = 1,2 \times 2,2$$

$$V_B = 3$$

$$V_A$$

$$\frac{V_C}{V_A} = \frac{5}{2}$$



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