

نوین کنکور

کنکور

امتحان نهایی

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

novinkonkor.com

حل مسائل فیزیکی کتک، تجربی، ریاضی ۱۴۳

۰۹۱۹۱۵۰۵۴۸۹

علی سواله زاده

[۴۶] گزینے ۲

$$t_1 = 5s$$

$$u_1 = 1$$

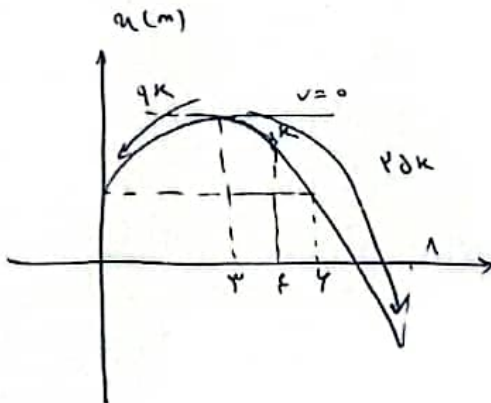
$$t_2 = 10s$$

$$u_2 = 24m$$

$$\rightarrow v_{av} = \frac{\Delta u}{\Delta t} = \frac{24-1}{10-5} = \frac{11}{5} = 2.2$$

$$u = vt + u_1 = 2.2t - 1$$

$$u_0 = 1 - 1.2 = -0.2$$



جهت تغییر در سرعت $a = -2$

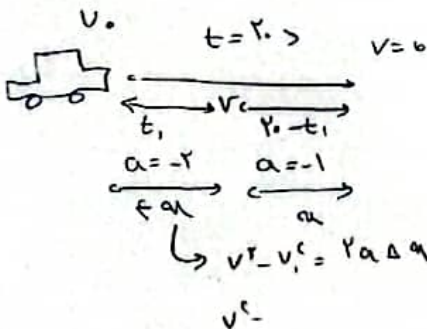
$$L = 9k + k = 10k$$

$$\rightarrow \frac{10k}{24k} = \frac{10}{24} = \frac{5}{12}$$

$$L_{rest} = 24k - k = 23k$$

[۴۷] گزینے ۲

[۴۸]



$$\rightarrow v_1 - v_c = 2 \times 2 \times t_1 \rightarrow v_0 = 3v_c$$

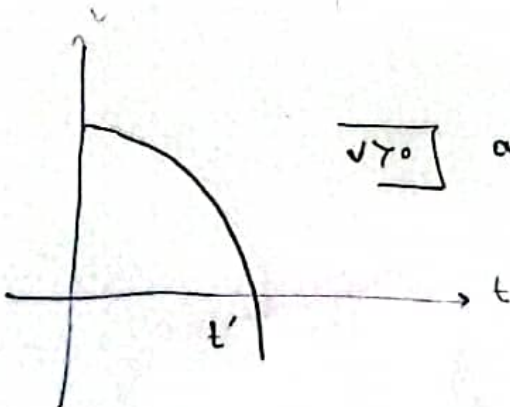
$$v_1 - v_c = 2 \times 1 \times t_2$$

$$a = \frac{\Delta v}{\Delta t}$$

$$t_1 = 10s \rightarrow \Delta a = \frac{1}{t} \Delta v$$

$$\Delta a = \frac{1}{10} \times 1 \times 20 = 2 \text{ m/s}^2$$

[۴۹] گزینے ۳



$$v > 0 \rightarrow a = \Delta v \rightarrow \Delta v < 0 \rightarrow a < 0$$

[۵۰] گزینے ۲

$$a = -2$$

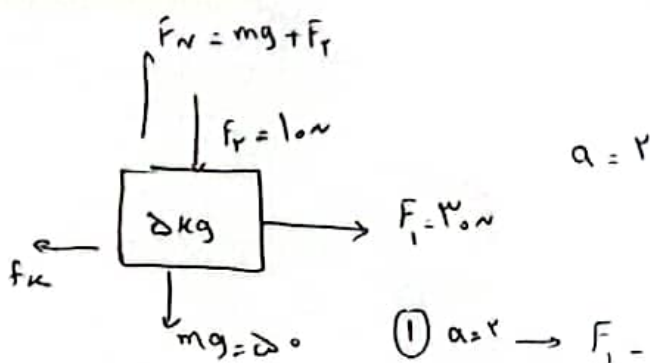


$$mg - kx = m \cdot a$$

$$\rightarrow kx = m(g - a)$$

$$a = \frac{m(g - a)}{k} = \frac{10 \times (10 - 2)}{100} = \frac{80}{100} = 0.8 \text{ m/s}^2 \rightarrow L_0 + L_1 + a = 3 \text{ cm}$$

۵۱ گزینے ۲



$$(1) a = 2 \rightarrow F_i - f_k = m \cdot a \rightarrow 30 - f_k = 10$$

$$\mu_k \frac{40}{2} = 20 \rightarrow \mu_k = \frac{1}{2} \quad \boxed{f_k = 20 \text{ N}}$$

$$(2) a = -2 \quad F_i - f_k = -10 \rightarrow \boxed{f_k = 40 \text{ N}}$$

$$\frac{1}{2} \mu_k F_N = 40 \rightarrow F_N = 160 \text{ N}$$

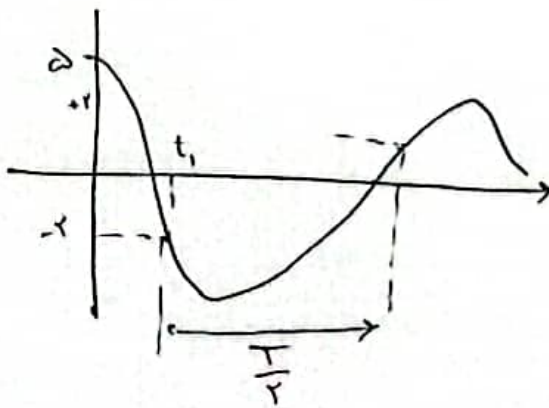
$$\hookrightarrow 120 = 20 + F_r \rightarrow \boxed{F_r = 100 \text{ N}} \quad \text{اقدام$$

$$122 \frac{\text{km}}{\text{h}} = 60 \frac{\text{m}}{\text{s}}$$

$$36 \frac{\text{km}}{\text{h}} = 10 \frac{\text{m}}{\text{s}}$$

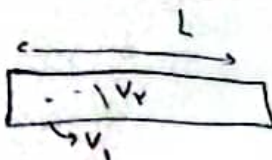
$$F_{av} = \frac{\Delta P}{\Delta t} = \frac{20 \times (-10 - 60)}{0.5} = 20 \times 20 \times 2 = 800 \text{ N}$$

۵۲ گزینے ۳



۵۳ گزینے ۲

۵۴ گزینے ۱



تندی مدت طرزاً تندی موت جامدات $v_1 > v_2$

۵۵ گزینے ۲

$$\frac{L}{t_1} > \frac{L}{t_2} \rightarrow t_2 > t_1$$

$$t_2 = \frac{L}{v_2} \rightarrow t_2 - t_1 = \frac{L}{v_2} - \frac{L}{v_1} = L \frac{(v_1 - v_2)}{v_1 v_2}$$

۵۶ [کزنے ۲]

$$f = 5 \times 10^{14} \text{ Hz}, \lambda = \frac{c}{f} = \frac{3 \times 10^8}{5 \times 10^{14}} \text{ m} \quad n_s?$$

۵۷ [کزنے ۲]

$$n = \frac{c}{v} \rightarrow v = \lambda f = 5 \times 10^{14} \times \frac{3 \times 10^8}{5 \times 10^{14}} = \frac{3 \times 10^8}{5 \times 10^{14}} \times 5 \times 10^{14}$$

$$n = \frac{3 \times 10^8}{\frac{3 \times 10^8}{5 \times 10^{14}} \times 5 \times 10^{14}} = \frac{1}{1} = 1$$

۵۸ [کزنے ۳]

$$n = 1.5$$

$$\Delta E = E_d - E_f = 0.41 \times 10^{-19} \text{ J} \rightarrow 1.0 \times 10^{-19} \text{ J}$$

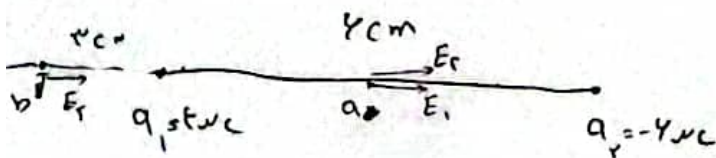
$$\Delta E_{1-2} = E_1 - E_2 = 1.4 \times 10^{-19} \text{ J}$$

۵۹ [کزنے ۱]

$$n' = 3, n = 2 \rightarrow \frac{1}{\lambda} = R_H \left(\frac{1}{n'^2} - \frac{1}{n^2} \right)$$

$$\lambda = \frac{1.09 \times 10^7}{4} = 2.725 \times 10^6 \text{ nm}$$

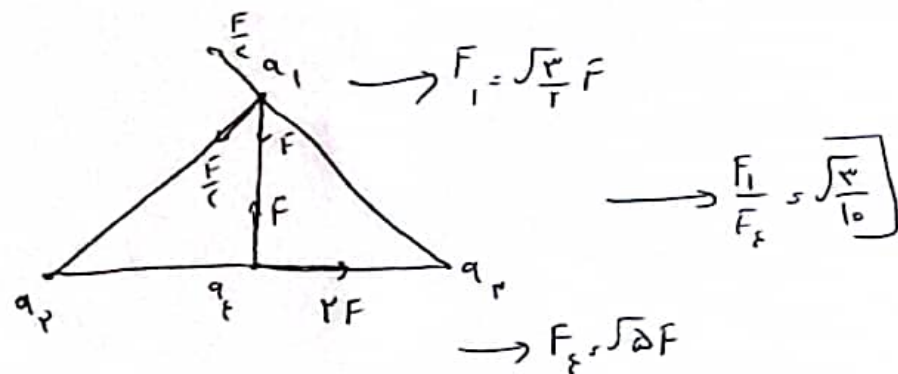
۶۱ [کزنے ۲]



$$\frac{E_a}{E_b} = \frac{1.0}{\frac{3.0}{11}} = \frac{11}{3} \times \frac{1.0}{3.0} = 1.1$$

$$E_a = E_1 + E_2 = \frac{4k}{a} + \frac{fk}{a} = \frac{10k}{a}$$

$$E_b = |E_1 - E_2| = \frac{4k}{11} - \frac{fk}{a} = \frac{3.0k}{11}$$



$$r = \frac{r}{r} \quad \boxed{4r}$$

گزینه ۱ [۴۳]

$$C = 5 \mu F, q = 200 \mu C \quad U_1 = \frac{1}{2} \frac{q^2}{C} = \frac{1}{2} \times \frac{200 \times 200 \times 10^{-12}}{5 \times 10^{-6}} = \frac{1}{2} \times \frac{4 \times 10^{-8}}{5} \times 10^6 = 4 \times 10^{-3} J$$

$$U_1 = \frac{1}{2} \times 10^{-2} = 5 \times 10^{-3} = 5 mJ$$

$$C = \frac{k \epsilon A}{d} \rightarrow C_2 = \frac{1}{4} C_1 = \frac{1}{4} \times 5 \times 10^{-6} \mu F \rightarrow U_2 = \frac{1}{2} U_1$$

$$\rightarrow U_2 = 2 mJ \rightarrow \Delta U = 2 mJ$$

گزینه ۴ [۴۴]

$$V = 220 V, I = 10 A \quad t = 2 h, 1 kw.h = 10$$

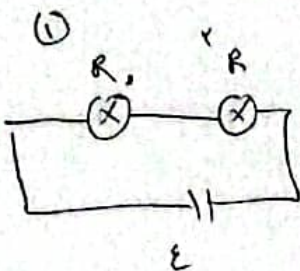
$$P = V \cdot I = 220 \times 10 = 2200 W$$

$$\rightarrow U = P \cdot t = \frac{2200 \times 120}{1000} = 22 \times 12 = 264 kw.h$$

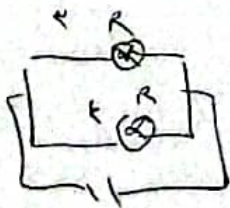
$$t = 3 \times 2 = 6 h$$

$$\text{هزینه} = 264 \times 20 = 5280$$

گزینه ۳ [۴۵]

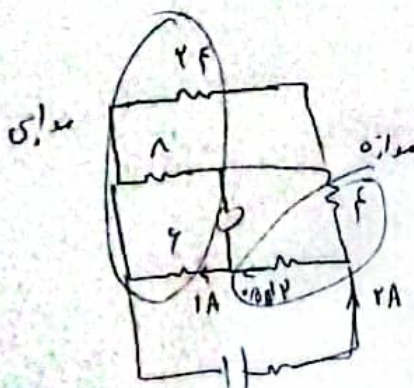


$$I = \frac{\epsilon}{2R} \quad P_1 = R \frac{\epsilon^2}{4R^2} = \frac{\epsilon^2}{4R}, \quad P_2 = \frac{\epsilon^2}{4R}$$



$$\rightarrow I = \frac{\epsilon}{R/2} = \frac{2\epsilon}{R} \rightarrow P_1 = R \frac{\epsilon^2}{R^2} = \frac{\epsilon^2}{R}, \quad P_2 = \frac{\epsilon^2}{R}$$

گزینه ۲ [۴۶]



$$R = 2 \rightarrow I = \frac{\epsilon}{2R} = \frac{12}{4} = 3 A$$

$$I_{\text{central}} = 0.5 A$$

$$L = 3 \text{ cm} \rightarrow A = 900 \times 10^{-6} \text{ m}^2 = 9 \times 10^{-4} \text{ m}^2 \quad \text{گزنی ۴۷}$$

$$T = 600 \times 10^{-6} \text{ s}, \quad \phi = B \cdot A \cos \theta = 5 \times 10^{-2} \times 9 \times 10^{-4} = 4.5 \times 10^{-6} \text{ Wb} = 4.5 \times 10^{-3} \text{ T} \cdot \text{m}^2$$

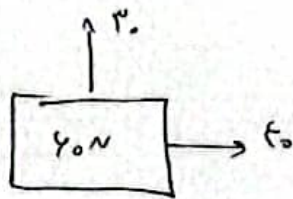
$$P_1 = P_2 \rightarrow (\rho_1 g h) + \rho_1 g y = (\rho_1 g h) + \rho_1 g y \rightarrow \rho_1 g y - \rho_1 g y = \rho_1 g h - \rho_1 g h \quad \text{گزنی ۴۸}$$

$$P_B = \rho_1 g y + P_0 \rightarrow P_A - P_B = \rho_1 g y - \rho_1 g y = 3 \rho_1 g h - \rho_1 g h = 2 \rho_1 g h$$

$$P_A = \rho_1 g y + P_0 \quad \text{گزنی ۴۹}$$

$$V_2 = \frac{D}{F} V_1 \rightarrow K_1 = K_2 \rightarrow \frac{1}{K} m_1 V_1^2 = \frac{1}{K} m_2 V_2^2$$

$$\rightarrow m_1 \times V_1^2 = m_2 \times \frac{10}{14} V_1^2 \rightarrow m_2 = \frac{14}{10} m_1 \rightarrow \frac{9}{10} \times 10 = 9 \text{ kg} \quad \text{گزنی ۵۰}$$



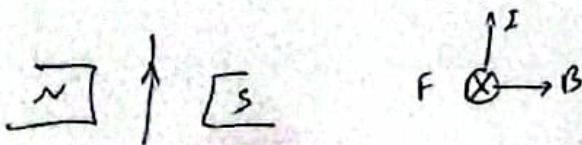
$$d = 10$$

$$\omega = F d \cos \theta, \quad 60 \times 10 \times 1 = 600$$

$$\frac{\text{kg} \cdot \text{m}^2}{\text{A} \cdot \text{s}^2} \rightarrow \text{فارمولا}$$

$$\text{گزنی ۵۱}$$

$$\text{گزنی ۵۲}$$



$$\text{گزنی ۵۳}$$

$$L = 10 \text{ cm}, N = 200, I = 5.0 \times 10^{-3} \text{ A}$$

$$\mu \rightarrow \mu_r \quad \boxed{\mu_r}$$

$$B_s = \frac{\mu_r N I}{L} = \frac{4\pi \times 10^{-7} \times 200 \times 5.0 \times 10^{-3}}{0.10} = 10 \times 10^{-2} \times 10^{-2} = 10 \times 10^{-4} = 10^{-3} \text{ T} = \boxed{1 \text{ mT}}$$

۷۵ [کتابخانه]

$$\sum Q = m_1 \times \frac{c}{r} \times 10 + m_1 \times 1 \cdot c + m_1 c \Delta = 100 m_1 c$$

$$\sqrt{Q} = m_1 c \times \Delta = \Delta \cdot m_1 c$$

$$\rightarrow Q_1 = Q_2$$

$$100 m_1 c = \Delta \cdot m_2 c$$

$$\frac{m_2}{m_1} = 100$$

نوین کنکور

کنکور

امتحان نهایی

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

novinkonkor.com