

نوین کنکور

کنکور

امتحان نهایی

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

novinkonkor.com

11

پاسخ تشریحی سوالات فیزیک کنکور ارشد ریاض

41) ⑤ گزین

42) ③ گزین

43) ① گزین

44) 25 kWh = 25 × 36 MJ = 90 MJ ② گزین

45) $\Rightarrow$ مدت زمان سقوط هر گلوله $\Rightarrow$ $\begin{vmatrix} 5 \\ 15 \\ 25 \\ 35 \end{vmatrix} \Rightarrow h = 1.0 \text{ m}$

④ گزین $\Rightarrow$ ارتفاع از سطح زمین = $1.0 - 2.0 = 9.0 \text{ m}$
 $\Rightarrow$ مدت زمان سپری شده هر گلوله 2

46)
$$\left. \begin{aligned} x_A &= \frac{1}{2} \times \frac{1}{2} t^2 + 0 = \frac{1}{4} t^2 \\ x_B &= \frac{1}{2} \times 2(t-2)^2 + 0 = t^2 - 4t + 4 \end{aligned} \right\} x_A = x_B \Rightarrow \begin{cases} t = 2 \text{ s} \\ t = 4 \text{ s} \end{cases}$$

$v_A = v_B \Rightarrow \frac{1}{2} t = 2(t-2) \Rightarrow \boxed{t = 4 \text{ s}}$

سک ① $\Rightarrow$ فاصله B از A در حال کاهش است. (4, 2)

12) (v)

$$x_A = vt + x_0$$

$$t = 5s \Rightarrow x_B = x_A$$

$$x_B = \frac{1}{2}at^2 + vt + x_0$$

$$\frac{1}{2}at^2 + vt + x_0 = vt + x_0$$

$$1/2 a = 0 \Rightarrow a = 0 \text{ m/s}^2$$

(f) سطر

13) $v = vt + v_0$

$$a = 4t \Rightarrow (t, v): a_{av} = \frac{1}{t} \left(\frac{4t^2}{2} \right) = 2 \text{ m/s}^2 \quad \text{د سطر}$$

14) $m = 2 \text{ kg}$

$$v_i = 2 \text{ m/s}$$

$$F_{\text{net}} = -1 \text{ N}$$

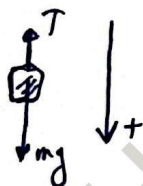
$$v_f = -2 \text{ m/s}$$

$$\Delta t = 1$$

$$F_{\text{net}} = \frac{m \Delta v}{\Delta t}$$

$$-1 = \frac{2(-2 - 2)}{\Delta t} \Rightarrow \Delta t = 2 \text{ s} \quad \text{د سطر}$$

15) د



$$a = \frac{F_{\text{net}}}{m} \Rightarrow a = \frac{mg - T}{m} \Rightarrow a = \frac{2 \times 9.8 - 15}{2}$$

$$a = 1.2 \text{ m/s}^2 \quad \text{د سطر}$$

16) $\frac{a_r}{a_i} = \frac{F_r}{F_i} \times \frac{m_i}{m_r} \Rightarrow \frac{r}{1r} = 1 \times \frac{m_i}{m_r} \Rightarrow m_r = r m_i$

$$m_r = m_r - m_i = r m_i$$

$$F_r = F$$

$$\frac{a_r}{a_i} = \frac{F_r}{F_i} \times \frac{m_i}{m_r} \Rightarrow \frac{a_r}{1r} = 1 \times \frac{1}{r} \Rightarrow a_r = \frac{1}{r} \text{ m/s}^2$$

(1) سطر

۱۲)

۵۲)

$$T = \frac{\Delta t}{N} = \frac{1.14}{3} s$$

$$r = 1.0m = 1m$$

$$v = \frac{r \Delta \theta}{T} = \frac{1 \times 1}{1.14/3} = 2.54 m/s$$

$$F_c = F_{s(max)}$$

$$\frac{mv^2}{r} = \mu_s \times mg$$

$$v^2 = r \times \mu_s \times g$$

$$v = \sqrt{r \times \mu_s \times g} = \sqrt{1 \times 1 \times 10} = 3.16 m/s$$

۱۳) سنج

$$۵۳) v = \sqrt{\frac{F}{\rho \cdot A}}$$

$$\frac{v_B}{v_A} = \sqrt{\frac{F_B}{F_A}} \times \sqrt{\frac{\rho_A}{\rho_B}} \times \sqrt{\frac{A_A}{A_B}}$$

$$\frac{v_B}{1.2} = 1 \times 1 \times \sqrt{1} \Rightarrow v_B = 1.2 m/s$$

۵۴) ۱۴)

$$۵۵) m = 1 kg$$

$$d = \frac{mg}{k} = 1/100 cm \Rightarrow k = 100 N/m$$

$$A = 10 cm$$

$$k_{max} = ? mJ = E = \frac{1}{2} k A^2$$

$$= \frac{1}{2} \times 100 \times (10)^2$$

$$= 5000 J$$

$$= 5 mJ$$

$$۵۶) v_A > v_B$$

$$d_A > d_B \Rightarrow$$

۱۵) سنج

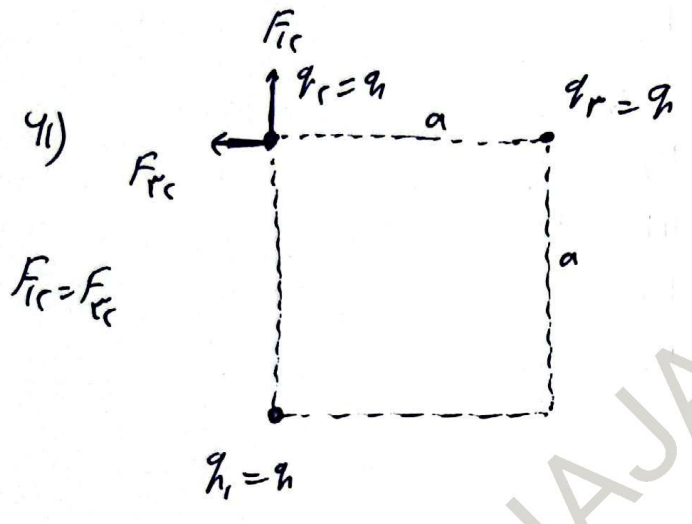
۵۷) ۱۶) سنج

5)

81) ①

89) ②

9.) $N = \frac{N_0}{14} = \frac{N_0}{r^4} \Rightarrow n = 4 \Rightarrow t = 4T$
 $\lambda = 4T \Rightarrow T = \frac{\lambda}{4}$

41) 

$F_{ir} = k \frac{q_i q_r}{r_{ar}}$
 $F_r = \sqrt{2} F_{ir} = \sqrt{2} k \frac{q_i q_r}{a^2}$
 $\frac{F_r}{F_{ir}} = \sqrt{2}$

42) $\begin{cases} V = \text{const.} \\ C = \frac{1}{r} C \end{cases} \Rightarrow U = \frac{1}{r} C V \Rightarrow U' = \frac{1}{r} U$
 $E = \frac{\Delta V}{d} \Rightarrow E' = E$

43) $I = \frac{11 - 4}{r + 1 + r} = \frac{1r}{4} = 1A$

① $\begin{cases} \text{کوتاهترین مسافت} = \varepsilon_1 I + r_1 I' = 4 \times r + 1 \times r' = r_{1w} \\ \text{کوتاهترین مسافت} = \varepsilon_1 I - r_1 I' = 11 \times r - 1 \times r' = r_{1w} \end{cases} \left\{ \frac{r_1}{r_1} = \frac{d}{\lambda} \right.$

15

44) $f_A = f_B$

$L_A = 2 L_B$

$m_A = \frac{1}{2} m_B$

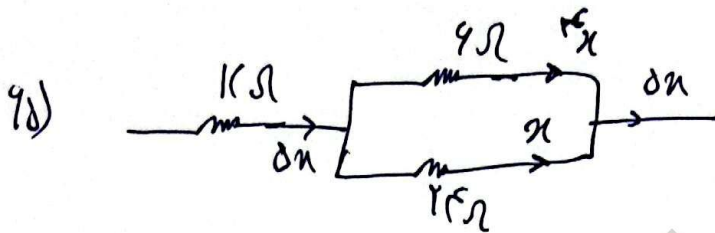
$\frac{f_A}{A_A} \times A_A \times \frac{1}{L_A} = \frac{1}{2} \frac{f_B}{A_B} \times A_B \times \frac{1}{L_B}$

$A_B = 2 A_A$

$R = f \frac{L}{A}$

$\frac{R_A}{R_B} = \frac{f_A}{f_B} \times \frac{L_A}{L_B} \times \frac{A_B}{A_A} = 1 \times 2 \times 2 = 4$

درست



$\frac{12 \times \delta n}{4 \times \delta n} = \frac{12 \times \delta n}{4 \times \delta n} = \frac{1}{2}$

درست

46) 1)

47) $B = \mu_0 \frac{N}{L} \times I \Rightarrow 10^{-4} \times 10^{-2} = \mu_0 \times \frac{N}{10^{-1}} \times 10^{-2}$

$10^{-4} \times 10^{-2} = N \times \mu_0 \times 10^{-3} \Rightarrow N = 100$

درست

48) $\phi = B \times A \times (\cos 90^\circ - \cos 0^\circ) = 0.01 \times 10^{-2} \times (0 - 1) = -1 \times 10^{-4} \text{ wb}$

درست

49) $P_g = f \cdot g \cdot h \Rightarrow h = \frac{100 \text{ cm}^3}{10 \text{ cm}^2} = 10 \text{ cm}$

$f_n h_n = f_{H_2} h_{H_2} \Rightarrow 12 \times 10 = 124 \times h_{H_2} \Rightarrow h_{H_2} = 9.68 \text{ cm}$

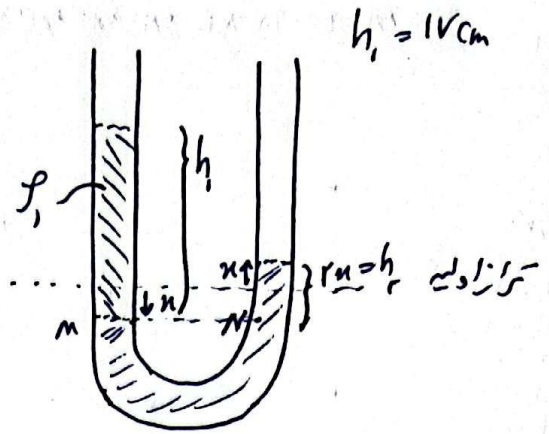
درست

14

v.) $P_m = P_n$
 $\rho_1 \times h_1 = \rho_2 \times h_2$

$\rho_1 \times 14 = 1.7 \times \rho_2 \times h_2$

$h_2 = 11.76 \text{ cm}$ ①



v.) $W_T = \Delta K \Rightarrow W_T = \frac{1}{2} m (v_c^2 - v_1^2)$

$\rho \times \frac{1}{2} m = \frac{1}{2} \times \rho_0 (v_c^2 - v_1^2)$

$\Delta v = v_c - v_1 \Rightarrow v_c = 142 \text{ km/h}$
 $v_c = 39.5 \text{ m/s}$ ②

v.) $\frac{1}{2} : A$
 $\frac{1}{2} : B$

$\begin{cases} m_A = \rho m_B \\ k_A = \frac{1}{\rho} k_B \end{cases}$

$v_A' = v_A + \rho m/s$

$k_A' = k_B \Rightarrow k_A' = \rho k_A \Rightarrow (v_A + \rho)^2 = \rho v_A^2$

$v_A + \rho = \sqrt{\rho} v_A \Rightarrow v_A = \frac{\rho}{\sqrt{\rho} - 1}$

$v_A = (\sqrt{\rho} + 1) m/s$ ③

v.) ④

v.) $\frac{P_1 \cdot T_1}{n_1 T_1} = \frac{P_2 \cdot T_2}{n_2 T_2}$

$T_1 = T_2$

$P_1 = P_2$

$\frac{n_1}{n_2} = \frac{T_1}{T_2}$

$\frac{n_1 - n_2}{n_1} = \frac{T_1 - T_2}{T_2} = \frac{-1}{T_2 + T_1} = \frac{-1}{T_2}$ ④

v.) ⑤

نوین کنکور

کنکور

امتحان نهایی

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

novinkonkor.com