

نوین کنکور

کنکور

امتحان نهایی

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

novinkonkor.com

10

1) 14) ①

16) $I = 15m (100T \times 1 \times 10^{-12}) = 15m \frac{T}{1} = 1A$ ①

17) ①

18) ①

20) $h = 14.0 km = \frac{9}{14} R_e \Rightarrow r = R_e + h = \frac{10}{14} R_e$

$W' = m \times g' = m \times \left(\frac{14}{10}\right)^2 g = 10 \times \frac{14 \times 14}{10 \times 10} \times 10 = 1.55 N$ ①

21) $a = \frac{dv}{dt} = \frac{0 - v_i}{t} = -5 m/s^2$

$F_{net} = m \times a = 10 \times (-5) = -50 N \Rightarrow |F_{net}| = 50 N$ ①

22) $\frac{I_r}{I_i} = \left(\frac{r_i}{r_r}\right)^2 \Rightarrow \frac{I_r}{1} = \left(\frac{4 \times 10^{-2}}{14}\right)^2 \Rightarrow \frac{I_r}{1} = 1.9 W/m^2$ ①

23) $\lambda = v \times T / \Delta t = 10/5 = \frac{T}{1} \Rightarrow \lambda = 1A$

$v = 10 \times T$

$T = \frac{1}{10} s$

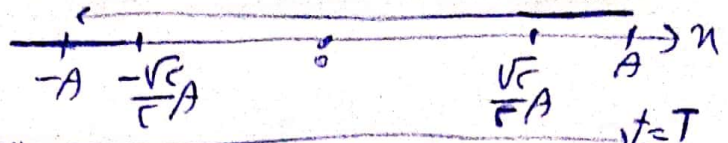
$\lambda = 1 \times 10 cm = 10 cm$

①

۲۰

با توجه به پرسشها:

$$\delta c) \quad T = \frac{\gamma \lambda}{\gamma \pi} = \frac{1}{\pi} s$$



$$\Delta t = -\gamma \Delta s = \frac{\gamma}{\pi} T$$

$$t = \frac{\gamma T}{c}$$

$$|V_{av}|_{max} = ? = \frac{|\Delta x|}{\Delta t} = \frac{A}{\frac{\gamma}{\pi} T} = \frac{\gamma \times 2cm}{\gamma \Delta s} = 1 cm/s$$

$$\delta d) \quad \Delta t = 1T \Rightarrow \sum_{av} = 25 cm/s \quad L = \gamma A \left\{ \frac{\gamma A}{\frac{1}{\pi}} = 25 \right.$$

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

$$A = 25 cm$$

$$(2, \frac{\gamma}{\pi}) s \Rightarrow \Delta t = \frac{\gamma}{\pi} s = \frac{\gamma T}{\pi} \Rightarrow |\Delta x| = \gamma A = 4 cm$$

$$\delta e) \quad N = \frac{N_0}{\gamma^n} \Rightarrow \frac{N_0}{\pi} = \frac{N_0}{\gamma^n} \Rightarrow \pi = \gamma \Rightarrow t = \frac{\gamma T}{c} \Rightarrow \gamma \pi = \gamma T$$

$$T(\frac{1}{\pi}) = 1 day$$

$$\delta v) \quad hf = 6.6 \times 10^{-34} \times 1.5 \times 10^{14} = 1.07 eV$$

$$E_f - E_i = 1.07 eV$$

۳

د ۱) $n = 2, n = 3, 4, \dots$

$$\frac{1}{\lambda} = R \left(\frac{1}{n_1^2} - \frac{1}{n^2} \right) = R \left(\frac{1}{14} - \frac{1}{19} \right) = R \frac{5}{14 \times 19}$$

$$\lambda = \frac{14 \times 19}{5R} = \frac{14 \times 19 \times 10^8}{5 \times 10^8} \approx 2244 \text{ nm}$$

(۲) ✓

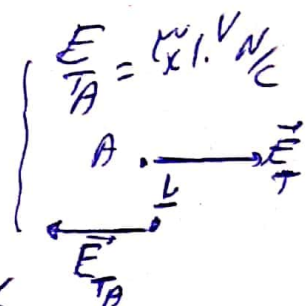
د ۲) $F_{\text{net}} = 0 \Rightarrow$ q_1, q_2, q_3

$$F_{12} = F_{13} \Rightarrow \frac{|q_1|}{q_1^2} = \frac{|q_2|}{q_2^2} \Rightarrow \left| \frac{q_2}{q_1} \right| = \frac{2}{9} \Rightarrow \frac{q_2}{q_1} = \frac{-2}{9}$$

(۳) ✓

۴) $A \text{ نښه: } E_1 = \frac{q_1 \times q_2 / 10^{-9}}{q_1 q_2 10^{-5}} = 2 \times 10^4 \text{ N/C}$

$$E_2 = \frac{q_1 \times q_3 / 10^{-9}}{q_1 q_3 10^{-5}} = 2 \times 10^4 \text{ N/C}$$



چون $\vec{E}_1$ او $\vec{E}_2$ $\Rightarrow E = 2 \times 10^4 + 2 \times 10^4 = 4 \times 10^4 \text{ N/C}$

آندې، $\sim$ $\Rightarrow E = 2 \times 10^4 \text{ N/C} \Rightarrow \frac{q_1 \times q_2 / 10^{-9}}{q_1 q_2 10^{-5}} = 2 \times 10^4$

$$|q_2| = 1 \times 10^{-9} \text{ C} \Rightarrow q_2 = -1 \mu\text{C}$$

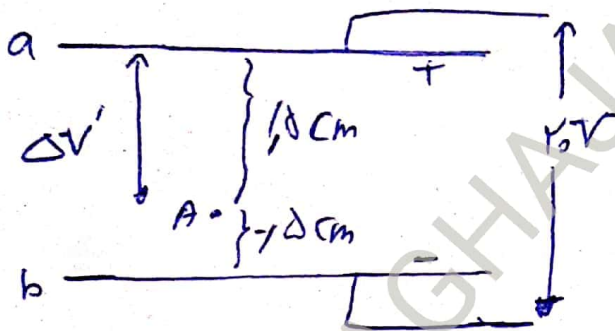
$$E_2 = 1 \times 10^4 \text{ N/C} \Rightarrow |q_2| = 1 \mu\text{C} \Rightarrow q_2 = -1 \mu\text{C}$$

(۴) ✓

Σ

$$41) E = \text{con.} \Rightarrow \frac{|\Delta V|}{d} = \frac{|\Delta V'|}{d'} \Rightarrow \frac{V_0 V}{V_{cm}} = \frac{|\Delta V'|}{10 \text{ cm}}$$

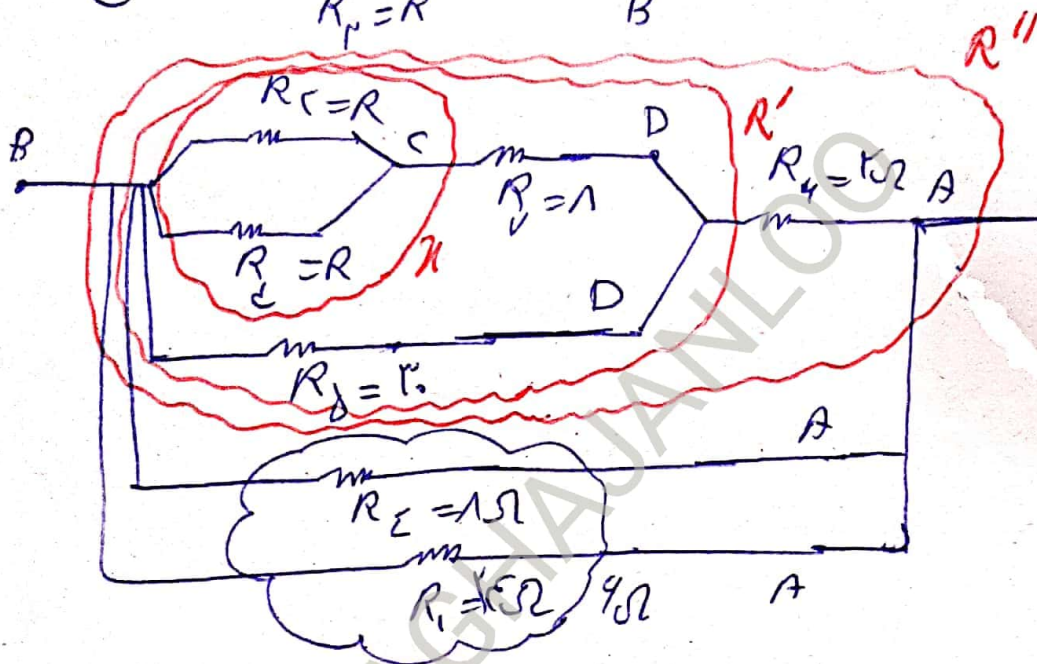
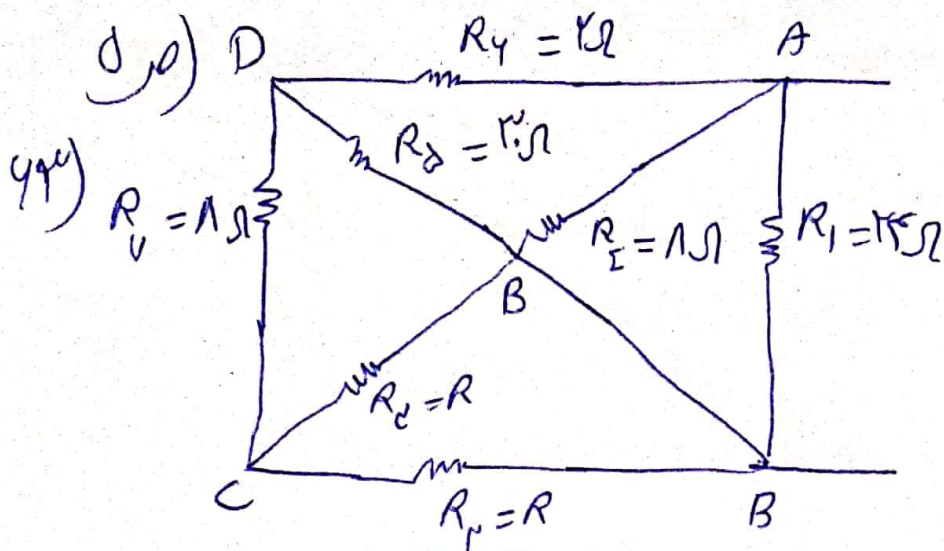
$$|\Delta V'| = 10 V$$



$$\begin{aligned} |\Delta U| &= |q \times |\Delta V|| \\ &= 8 \times 10^{-9} \times 10 \\ &= 8 \times 10^{-8} \text{ J} \\ &= 80 \text{ mJ} \end{aligned}$$

$$\Delta U = -80 \text{ mJ} \quad \text{Ⓢ}$$

$$42) R = \frac{\rho L}{A} = 10^{-10} \times \frac{10 \times 10^{-2}}{8 \times 10^{-8}} = 1.25 \quad \text{Ⓢ}$$



$$V = E - I \cdot r$$

$$12 = 11 - I \times 1 \Rightarrow I = 1A$$

$$I = \frac{E}{R_{eq} + r} \Rightarrow r = \frac{11}{R_{eq} + 1}$$

$$R_{eq} = 5\Omega$$

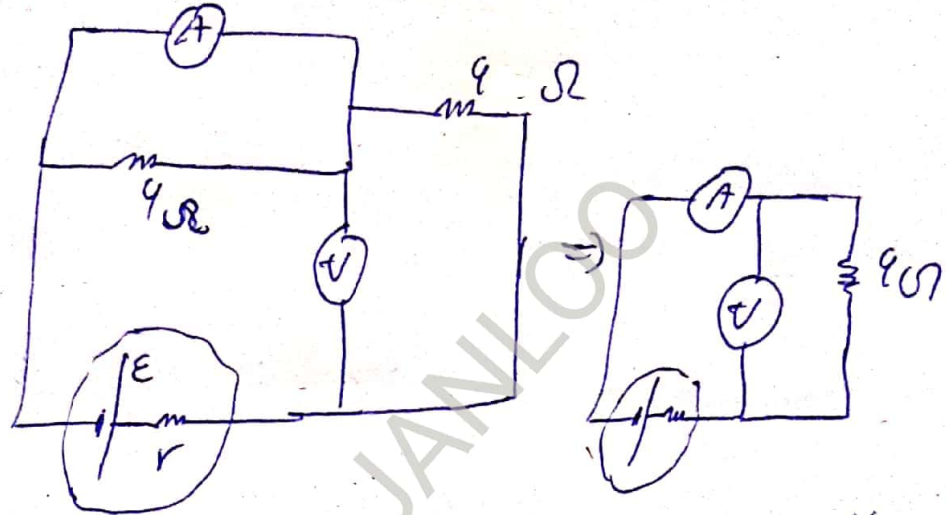
$$\frac{4R''}{4 + R''} = 1 \Rightarrow R'' = 1\Omega$$

$$R' = 1\Omega \Rightarrow R = 1\Omega \quad \text{D.F.}$$

۴۵

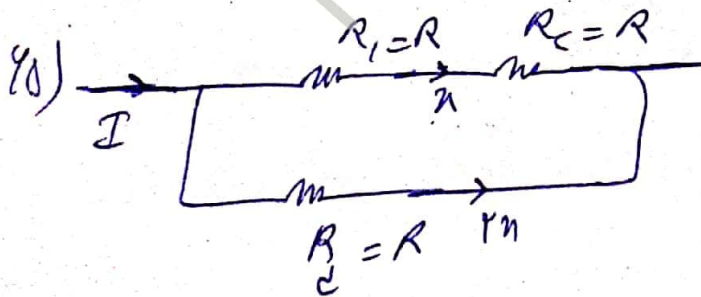
۴۴) در حالت اول : $I = \frac{24}{4+2} = 4$...
 عدد ولت سنج = $\begin{cases} I \times 4 \\ 24 - I \times 2 \end{cases}$
 (در ۴ و ۲ اهم حذف)

(در حالت دوم)



عدد ولت سنج = $I = \frac{E = 24}{4+2}$ ✓

عدد ولت سنج = $I \times 4$ (س)



$P = RI^2$
 $P_1 = R I^2$
 $P_2 = R I^2$
 $P_3 = R (2I)^2 = 4P_1 = 4P_2$
 (د)

✓✓)

$$99) \frac{\Delta A}{\Delta t} = 1 \times 10^{-17} \frac{m}{s}$$

$$B = -\Delta T$$

$$\bar{\epsilon} = -N \frac{\Delta \phi}{\Delta t}$$

$$= -N \cdot B \cdot \cos \theta \cdot \frac{\Delta A}{\Delta t}$$

$$= -1 \times \frac{1}{2} \times 1 \times 1 \times 10^{-17}$$

$$= -10^{-17} \text{ V} \Rightarrow |\bar{\epsilon}| = 10 \text{ V}$$

Ⓢ

$$9v) P_{gas_B} = P_0 + \rho \cdot g \cdot h$$

$$P_{gas_A} = P_{gas_B} + \rho \cdot g \cdot h = P_0 + \rho \cdot g \cdot h$$

$$120 \times 10^3 = 100 \times 10^3 + \rho \cdot 14 \Rightarrow \rho = \frac{20}{14} \times 10^3 \text{ kg/m}^3$$

$$\rho = 1428.57 \frac{kg}{m^3}$$

$$41) W_T = \Delta K$$

$$1400 \times 10^3 = \frac{1}{2} \times 1000 \cdot (V_B^2 - 10^4) \Rightarrow V_B = 10 \frac{m}{s} = 10 \frac{km}{h}$$

Ⓢ

10

$$99) \Delta L = \alpha \cdot L \cdot \Delta \theta$$

$$= 1.8 \times 10^{-5} \times 10 \times 100 = 1.8 \times 10^{-2} \text{ m} = 1.8 \text{ mm}$$

(5)

$$10) Q = m \cdot C_{ice} \Delta \theta_{ice} + m \cdot \frac{L}{F} + m \cdot C_{water} \cdot \Delta \theta_{water}$$

$$= m \left(\frac{1}{F} C_{ice} \times 100 + 1 \cdot C_{ice} + 100 \cdot C_{water} \right)$$

$$= m \times 190 C_{water} = 10 \times 190 \times 5.7 = 1099 \text{ kJ}$$

(10)

9

V1) $a = \text{con.} = a_{av}$

$t_i = 0 \Rightarrow V_0 = 1 \text{ m/s} \Rightarrow a = a_{av} = \frac{\Delta V}{\Delta t} = \frac{-1}{0} = -1 \text{ m/s}^2$

$t_f = 0.5 \Rightarrow V = -1 \text{ m/s}$

$V = at + V_0 \Rightarrow V = -t + 1$

$t = 1.05 \Rightarrow V = 0$

$(0, 1.05) \text{ s: } V < 0 \Rightarrow L = |\Delta x| \Rightarrow S_{av} = |V_{av}|$

$V_{av} = -1 \left(\frac{0+1.05}{2} \right) + 1 = -0.525 \text{ m/s} \Rightarrow |V_{av}| = 0.525 \text{ m/s}$
 $\Rightarrow S_{av} = 0.525 \text{ m}$

V2) $t_i = 0.5 \Rightarrow V_i = 14 \text{ m/s} \Rightarrow a_{av} = \frac{\Delta V}{\Delta t} = \frac{11-14}{1.5-0.5} = -3 \text{ m/s}^2$
 $t_f = 1.5 \Rightarrow V_f = 11 \text{ m/s}$

V3) $t = 5 \text{ s} \Rightarrow \begin{cases} x = 1 \text{ m} \\ V = 0 \end{cases}$

$a = \text{con.}$

$(0, 4) \text{ s: } \Delta x = -4 \text{ m}$

$x=0 \Rightarrow |V|=?$

$\Delta x = \frac{1}{2} a (t_n - 1) + V_0$
 $-4 = \frac{1}{2} a (5 - 1) + V_0$

$-4 = 2a + V_0$
 $V = at + V_0 \Rightarrow 0 = a \cdot 5 + V_0$
 $\Rightarrow a = -1 \text{ m/s}^2$

$V_f - V_i = a(\Delta t)$

$V_f - 0 = 1(-1)(0-1) \Rightarrow V = \pm 1 \text{ m/s}$
 $S = 1 \text{ m/s}$

سوال

۱۴)

$$\begin{aligned}
 x &= -rt^c + 1.0t - 1 \\
 &= -r(t^c - 1.0t + 1) \\
 &= -r(t-1)(t-1)
 \end{aligned}$$

$$v = -ct + 1.0$$

$t(s)$	0	1	r, d	c
x	-	0	+	+
v	+	+	0	-

$(r, d, c)_s$: $\begin{cases} x_1 = r \times 1.0 \times 1.0 \\ x_c = 0 \end{cases} \Rightarrow \frac{\Delta x}{\Delta t} = \frac{0 - r \times 1.0 \times 1.0}{1 - 1.0}$

$$\begin{aligned}
 \vec{v}_{av} &= - \frac{r \times 1.0}{1} \\
 \vec{v}_{av} &= - r \vec{c}
 \end{aligned}$$

۱۵) سوال

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