

Απαντήσεις

ΘΕΜΑ Α

$A_1 \alpha, A_2 \delta, A_3 \delta, A_4 \gamma, A_5 \Sigma \Lambda \Lambda \Sigma$

ΘΕΜΑ Β

$B_1 - \alpha$

Αιχμασσομύηση:

$$\frac{1}{R_{\text{eq1}}} = \frac{1}{2R} + \frac{1}{R} \Rightarrow \frac{1}{R_{\text{eq1}}} = \frac{3}{2R} \Rightarrow$$

$$R_{\text{eq1}} = \frac{2R}{3}$$

$$R_{\text{eq2}} = \frac{R}{2} + R \Rightarrow R_{\text{eq2}} = \frac{3R}{2}$$

$$\text{Αφ' } I_1 = \frac{E}{\frac{2R}{3}} \Rightarrow I_1 = \frac{3E}{2R}$$

$$I_2 = \frac{E}{\frac{3R}{2}} \Rightarrow I_2 = \frac{2E}{3R}$$

$$\left. \begin{array}{l} I_1 = \frac{3E}{2R} \\ I_2 = \frac{2E}{3R} \end{array} \right\} \frac{I_1}{I_2} = \frac{\frac{3E}{2R}}{\frac{2E}{3R}} \Rightarrow \frac{I_1}{I_2} = \frac{9}{4}$$

$B_2 - \beta$

Αιχμασσομύηση: $F_A = F_B \Rightarrow \cancel{K} \frac{Q_A Q}{r_A^2} = \cancel{K} \frac{Q_B Q}{r_B^2} \Rightarrow$

$$\frac{Q_A}{\frac{r_A^2}{16}} = \frac{Q_B}{\frac{r_B^2}{16}} \Rightarrow \frac{Q_A}{r_A^2} = \frac{Q_B}{r_B^2} \Rightarrow Q_B = 9Q_A$$

ΘΕΜΑ Γ

$$\Gamma_1) R_{\text{eq}} = R_1 + R_2 = 6 \Omega \quad I = \frac{E}{R_{\text{eq}}} = \frac{12}{6} = 2 \text{ A}$$

$$\Gamma_2) V_{\text{π}} = E - I r \Rightarrow V_{\text{π}} = 12 - 2 \Rightarrow V_{\text{π}} = 10 \text{ V}$$

$$\Gamma_3) P_{\text{π}} = E \cdot I = 12 \cdot 2 = 24 \text{ W}, \quad P_r = I^2 r = 4 \text{ W}$$

$$\Gamma_4) P_{\text{q}} = I^2 R_2 t = 4 \cdot 3 \cdot 120 = 1440 \text{ J}$$

ΘΕΜΑ Δ

$$E_2 = \frac{E_1}{4} = -3,4 \text{ eV}$$

$$E_3 = -1,51 \text{ eV}, \quad E_4 = -0,85 \text{ eV}$$

$$\Delta_1) E_n = \frac{E_0}{n^2}$$

$$\Delta_2) K_{\text{αχ}} + E_1 = K_{\text{β3}} + E_3 \Rightarrow 13 - 13,6 = K_{\text{β3}} - 1,51 \Rightarrow K_{\text{β3}} = 13 - 13,6 + 1,51$$

$$K_{\text{β3}} = 0,91 \text{ eV}$$