Απαντήσεις Θεμάτων · 2016-17·

$A_1 - \gamma$, $A_2 - \gamma$, $A_3 - \delta$, $A_4 - b$, $A_5 - \Lambda, \Sigma, \Lambda, \Lambda, \Sigma$.

$B_1 - \gamma$ ·   Διότι. $k\dfrac{2Q}{r_1^2} = k\dfrac{Q}{r_2^2} \Rightarrow \dfrac{r_1^2}{r_2^2} = 2 \Rightarrow \dfrac{r_1}{r_2} = \sqrt{2}$

$B_2 - b$ Διότι. $V_{\eta} = \mathcal{E} - I \cdot r = \mathcal{E} - \dfrac{V_{\eta}}{R}r \Rightarrow 8 = 10 - \dfrac{8}{8}r \Rightarrow$

$$\Rightarrow r = 2 \Omega$$

Γ₁)
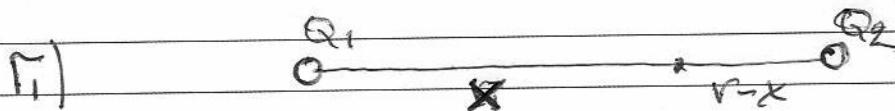
$k\dfrac{Q_1}{x^2} = k\dfrac{Q_2}{(r-x)^2} \Rightarrow \left(\dfrac{r-x}{x}\right)^2 = \dfrac{Q_2}{Q_1} \Rightarrow \dfrac{16-x}{x} = \sqrt{9} \Rightarrow$

$16 - x = 3x \Rightarrow x = 4 cm$.

Γ₂). $V = k\dfrac{Q_1}{x} + k\dfrac{Q_2}{r-x} = 9 \cdot 10^9 \left(\dfrac{2 \cdot 10^{-6}}{4 \cdot 10^{-2}} + \dfrac{18 \cdot 10^{-6}}{12 \cdot 10^{-2}}\right) \Rightarrow$

$V = 9 \cdot 10^9 (0,5 + 1,5) \cdot 10^{-4} \Rightarrow V = 18 \cdot 10^5$ Volt·

Γ₃). $W = q(V - V_{\infty}) = 2 \cdot 10^{-6} \cdot 18 \cdot 10^5 = 3,6$ Joule

Δ₁). $I = \dfrac{\mathcal{E}}{R_{εξ}+r} = \dfrac{12}{6} = 2A$, $V_{\eta} = \mathcal{E} - Ir = 12 - 2 = 10V$.

Δ₂). $V_1 = IR_1 = 2 \cdot 2 = 4V$, $V_2 = I \cdot R_2 = 2 \cdot 3 = 6V$.

Δ₃). $P_{\eta} = \mathcal{E} \cdot I = 12 \cdot 2 = 24W$·

$P_1 = I^2 R_1 = 4 \cdot 2 = 8W$, $P_2 = I^2 \cdot R_2 = 4 \cdot 3 = 12W$

$P_r = I^2 \cdot r = 4W$.