

Σύντομος απαντήσεις Φυσ. Κατ. Β' 2013

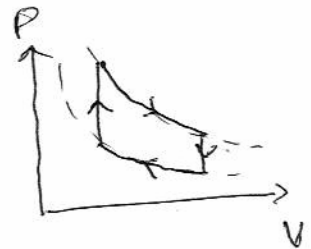
Θεμα 1^ο 1α 2γ 3β 4α 5 ΑΣΣΑΛ.

Θεμα 2^ο 1. α) (ii) β) $v_{\text{rms}} = \sqrt{\frac{3RT}{M_r}} \left\langle \begin{array}{l} v_{\text{rmsA}} = \sqrt{\frac{3RT_A}{M_rA}} \\ v_{\text{rmsB}} = \dots \end{array} \right\} \Rightarrow \dots$

2. α) (ii) β) $a = \frac{E \cdot q}{m} \Rightarrow \left\langle \begin{array}{l} a_A = \dots \\ a_B = \dots \end{array} \right\} \Rightarrow \dots$

3. α) (iii) β) $E \cdot q = -L \frac{di}{dt} \Rightarrow \left\langle \dots \right\} \Rightarrow \dots$

Θεμα 3^ο α). $P_A V_A = n R T_A \Rightarrow \dots \Rightarrow T_A = 1600 \text{ K}$.
 ομοίως $T_r = 2400 \text{ K}$.



β) $W_{AB} = n R T_A \ln \frac{V_B}{V_A} = \dots = -2240 \text{ J}$
 $W_{CA} = n R T_r \ln \frac{V_A}{V_r} = \dots = 3360$ } $W = 1120 \text{ J}$

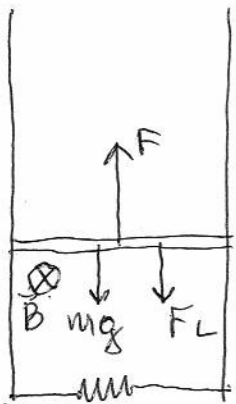
γ) $Q_{BC} = n C_V \Delta T = 2400 \text{ J}$
 $Q_{DA} = 3360 \text{ J}$ } $Q_h = 5760 \text{ J}$

$e = \frac{W}{Q_h} = \frac{1120}{5760} \approx 0,198$

δ) $P = \frac{W_{\text{ος}}}{t_{\text{ος}}} = \frac{N \cdot W}{t} = \frac{3000}{60} \cdot 1120 = 56 \text{ kW}$

Θεμα 4^ο

α) $0 < v \leq v_{\text{op}} \Rightarrow F = 0$ τότε $v = v_{\text{op}}$. Από $F - mg - F_L = 0 \Rightarrow$
 $F_L = F - mg \Rightarrow B i l = 5 \Rightarrow \frac{B^2 l^2 v_{\text{op}}}{R + R} = 5 \Rightarrow v_{\text{op}} = 4 \text{ m/s}$



β) $V_R = I \cdot R = \frac{E \epsilon n}{R + R} R = \frac{B l v_{\text{op}} L}{R + R} R = 1 \text{ V}$

γ) $\frac{\Delta K}{\Delta t} = \sum F \cdot v = (F - F_L - mg) v = \left(F - mg - \frac{B^2 l^2 v_{\text{op}}}{R + R} \right) \frac{v_{\text{op}}}{2} = 5 \frac{\text{J}}{\text{s}}$

δ) $P_{R_1} = I^2 R_1 = \left(\frac{E \epsilon n}{R + R} \right)^2 R_1 = 10 \text{ W}$