

ΘΕΜΑ Α

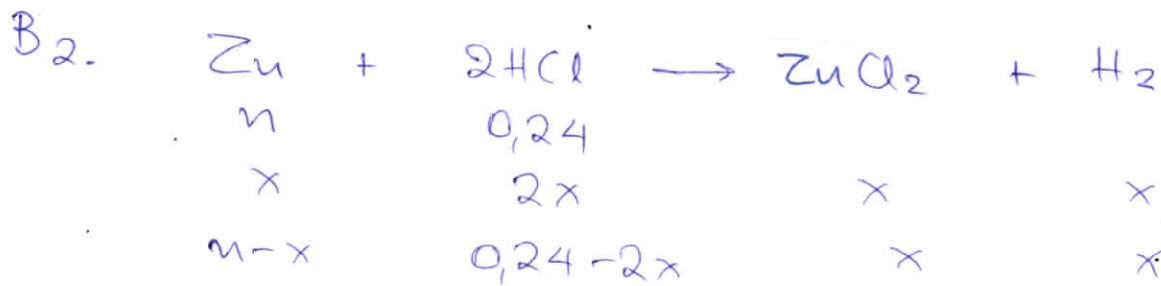
A₁. β ; A₂. γ , A₃. δ , A₄. β . A₅: λ, λ, λ, ς, λ

ΘΕΜΑ Β

B₁. $K_c = \frac{4^2}{4 \cdot 1} = 4$ Δοχείο (I) (xI)

$Q_c = \frac{8^2}{2 \cdot 1} > K_c$ Δοχείο (II)

$Q_c = \frac{2^2}{8 \cdot 2} < K_c$ Δοχείο (III)



$N_1 = \frac{x}{98 \Delta t}$

Ομοίως : $N_2 = \frac{y}{0,4 \Delta t}$

$\frac{v_1}{v_2} = \frac{x \cdot 0,4}{y \cdot 98}$

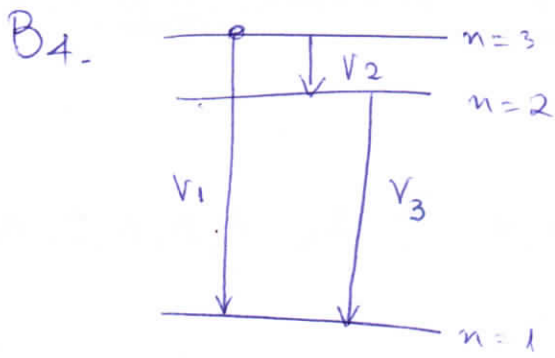
⇒ $\boxed{\frac{v_1}{v_2} = \frac{1}{2}}$

(x=y) από διάγραμμα



α. ↑ η NH₃ άρα η (1) δεξιά

β. ↑ θ̂ ⇒ ↓ διαλυτότητας της NH₃. ↓ NH₃ : αριστερά



$$\Delta E_{1 \rightarrow 3} = |E_1 - E_3| = \frac{8}{9} |E_1| = h\nu_1$$

$$\Delta E_{3 \rightarrow 2} = |E_2 - E_3| = \left| \frac{E_1}{4} - \frac{E_1}{9} \right| = \frac{5|E_1|}{36} = h\nu_2$$

$$\Delta E_{2 \rightarrow 1} = |E_2 - E_1| = \left| E_1 - \frac{E_1}{4} \right| = \frac{3}{4} |E_1| = h\nu_3$$

$$a) \nu_1 = \frac{8}{9} \frac{|E_1|}{h}$$

$$\nu_2 = \frac{5}{36} \frac{|E_1|}{h}$$

$$\nu_3 = \frac{3}{4} \frac{|E_1|}{h}$$

$$\nu_2 + \nu_3 = \left| \frac{5}{36} + \frac{27}{36} \right| \frac{|E_1|}{h} \Rightarrow$$

$$\Rightarrow \nu_2 + \nu_3 = \frac{8}{9} \frac{|E_1|}{h} = \nu_1$$

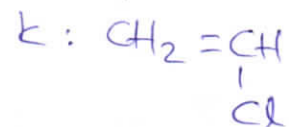
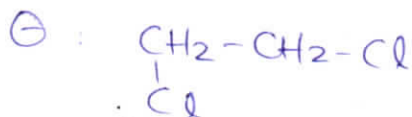
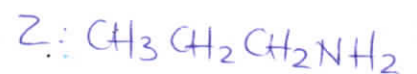
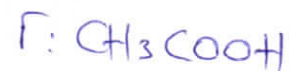
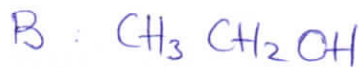
$$\leadsto \boxed{\nu_1 = \nu_2 + \nu_3}$$

$$b) \frac{\nu_1}{\nu_3} = \frac{\frac{8}{9}}{\frac{3}{4}} = \frac{32}{27}$$

8) 6 СУХВОТНУТЕС.

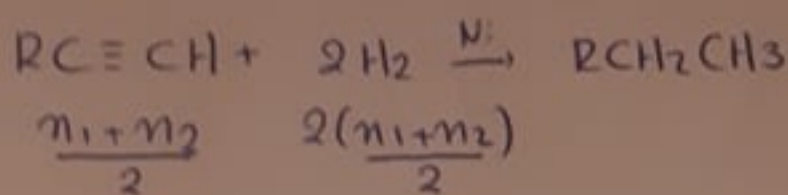
• Θ E M A Γ

1.

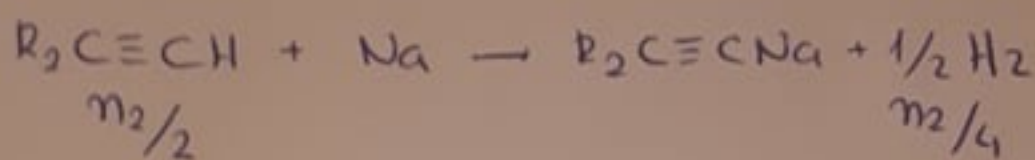
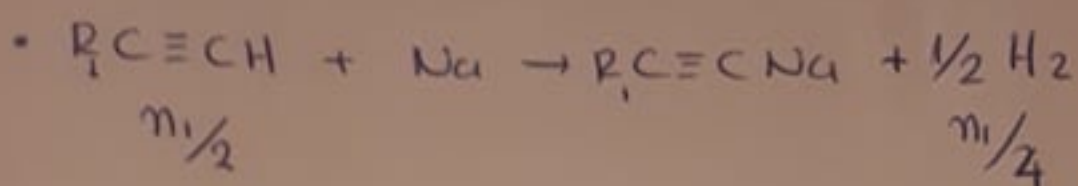


$$r_2. \quad n_{H_2} = 2 \text{ mol}$$

$$M_{R_1} n_1 + M_{R_2} n_2 = 68,8 \quad (1)$$

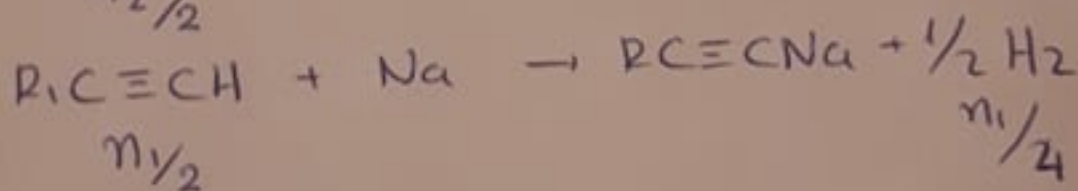
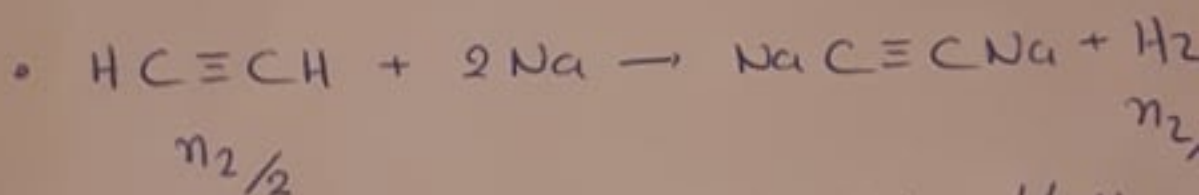


$$n_1 + n_2 = 2 \text{ mol} \quad (2)$$



$$\frac{n_1}{4} + \frac{n_2}{4} = 0,7 \Rightarrow n_1 + n_2 = 2,8 \text{ mol}$$

азото



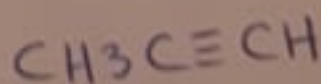
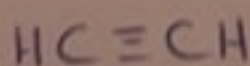
$$n_1/4 + n_2/2 = 0,7 \Rightarrow n_1 + 2n_2 = 2,8 \text{ mol}$$

$$(2), (3) \quad n_2 = 0,8 \text{ mol} \quad n_1 = 1,2 \text{ mol}$$

$$1,2 \cdot M_r + 0,8 \cdot 26 = 68,8$$

$$M_r = 40$$

$$14v - 2 = 40 \Rightarrow v = 3$$



3

Μεταξύ των δύο αλκοολών
δεν μπορεί να γίνει διάκριση.

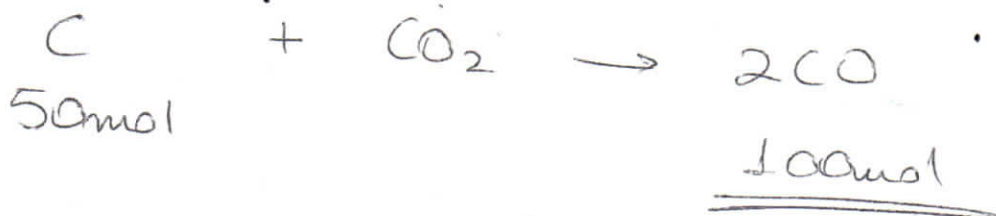
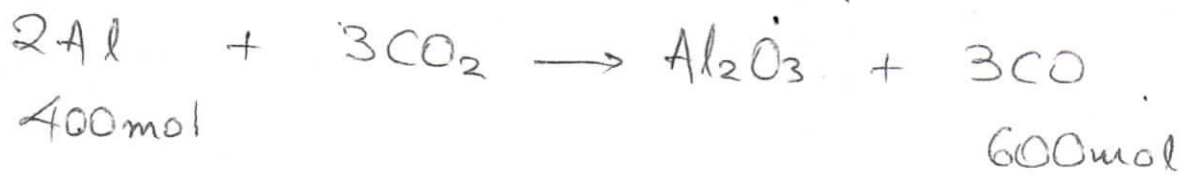
Με Na_2CO_3 θα ελευθερωθεί
αέριο CO_2 μόνο από το $\text{CH}_3\text{CH}_2\text{COOH}$

ΘEMA ΔΔ₁

$$1020 \text{ kg Al}_2\text{O}_3 = 10000 \text{ mol}$$



$$\text{To } 2\% \text{ tur } 2 \cdot 10^4 \text{ mol} \Rightarrow \underline{400 \text{ mol Al}}$$



$$n_{\text{CO}} = 700 \text{ mol}$$

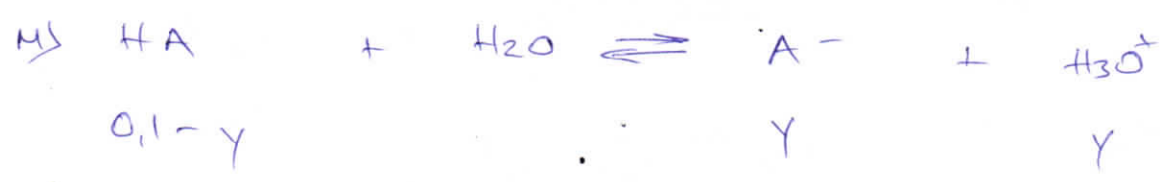
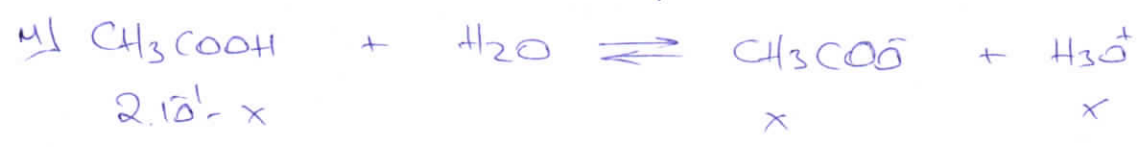
note $V = 700 \cdot 22,4 = \underline{\underline{15.680 \text{ L}}}$

Δ_2 .

a) $C_{CH_3COOH} = \frac{0,05}{0,5} = 0,1 M$

$[CH_3COOH] = \frac{0,1 \cdot 0,05}{0,25} = 2 \cdot 10^{-2} M$

$[HA] = \frac{\frac{1}{8} \cdot 0,2}{\frac{1}{4}} = 0,1 M$



$x + y = 10^{-3,5} M$

$K_a(HA) = \frac{y \cdot 10^{-3,5}}{0,1} \Rightarrow y = \frac{2 \cdot 10^{-7}}{10^{-2,5}} = 2 \cdot 10^{-4,5} = 0,2 \cdot 10^{-3,5} M$
 $x = 0,8 \cdot 10^{-3,5} M$

$K_a = \frac{0,8 \cdot 10^{-3,5} \cdot 10^{-3,5}}{0,02} = 40 \cdot 10^{-7} = 4 \cdot 10^{-6}$

$K_a^\theta < K_a(25^\circ C)$ άρα $\theta < 25^\circ C$

b) $n_{CH_3COOH} = 0,026 mol$
 $n_{NaOH} = 10^{-3} mol$ } $\Rightarrow \underline{pH = 10,5}$

Προκύπτει : $CH_3COOH : 0,025 M$
 $CH_3COONa : 0,001 M$

$[H_3O^+] = K_a \cdot \frac{0,025}{0,001} = 4 \cdot 10^{-6} \cdot \frac{25 \cdot 10^{-3}}{10^{-3}} = 10^{-4}$

$$[\text{OH}^-] = 10^{-10,5} \text{ M}$$

$$K_w = 10^{-4} \cdot 10^{-10,5} = 10^{-14,5}$$

