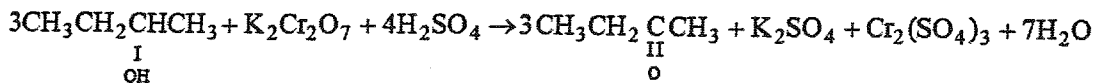


β.



3 mol 1 mol

0,3 mol ;

$$; = 0,1 \text{ mol} \quad V = \frac{n}{C} = \frac{0,1}{0,2} = 0,5 \text{ L}$$

Θέμα 4^ο

$$4.1. \quad \alpha. \quad n_{\text{NaA}} = 0,04 \text{ mol} \quad n_{\text{HCl}} = \frac{448}{22400} = 0,02 \text{ mol} \quad V = 1,6 \text{ L}$$



αρχ. 0,04 0,02

α-π 0,02 0,02 0,02 0,02

τελ. 0,02 — 0,02 0,02

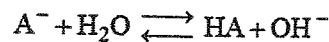
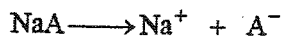
Το NaCl δεν επηρεάζει το pH του διαλύματος.

$$C_{\text{NaA}} = \frac{0,02}{1,6} = \frac{1}{80} \text{ M}$$

$$C_{\text{HA}} = \frac{0,02}{1,6} = \frac{1}{80} \text{ M}$$

$$[\text{H}_3\text{O}^+] = K_a \frac{C_{\text{HA}}}{C_{\text{NaA}}} \Rightarrow 10^{-5} = K_a \frac{\frac{1}{80}}{\frac{1}{80}} \Rightarrow K_a = 10^{-5}$$

$$\beta. \quad C_{\text{NaA}} = \frac{0,04}{1,6} = 0,025 \text{ M}$$



0,025 0,025 0,025

0,025-x x x

$$K_b(\text{A}^-) = \frac{K_w}{K_a(\text{HA})} = \frac{10^{-14}}{10^{-5}} = 10^{-9}$$

$$10^{-9} = \frac{x^2}{0,025 - x} \Rightarrow x^2 = 25 \cdot 10^{-12} \Rightarrow x = 5 \cdot 10^{-6} \text{ M}$$

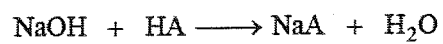
$$[\text{H}_3\text{O}^+] = \frac{K_w}{[\text{OH}^-]} = \frac{10^{-14}}{5 \cdot 10^{-6}} \Rightarrow [\text{H}_3\text{O}^+] = 2 \cdot 10^{-9} \text{ M}$$

$$\gamma. \quad n_{\text{NaA}} = 0,02 \text{ mol}$$

$$n_{\text{HA}} = 0,02 \text{ mol}$$

$$n_{\text{NaOH}} = 2,5 \cdot 10^{-2} \cdot 0,4 = 0,01 \text{ mol}$$

$$V_{\text{ολ}} = 2 \text{ L}$$



αρχ.	0,01	0,02	0,02
α-π	-0,01	-0,01	+0,01
τελ.	—	0,01	0,03

$$C_{\text{HA}} = \frac{0,01}{2} = \frac{1}{200} \text{ M}$$

$$C_{\text{NaA}} = \frac{0,03}{2} = \frac{3}{200} \text{ M}$$

$$[\text{H}_3\text{O}^+] = K_a \frac{C_{\text{HA}}}{C_{\text{NaA}}} = 10^{-5} \frac{\frac{1}{200}}{\frac{3}{200}} \Rightarrow [\text{H}_3\text{O}^+] = \frac{1}{3} 10^{-5} \text{ M}$$