

Άσκηση 6.3.

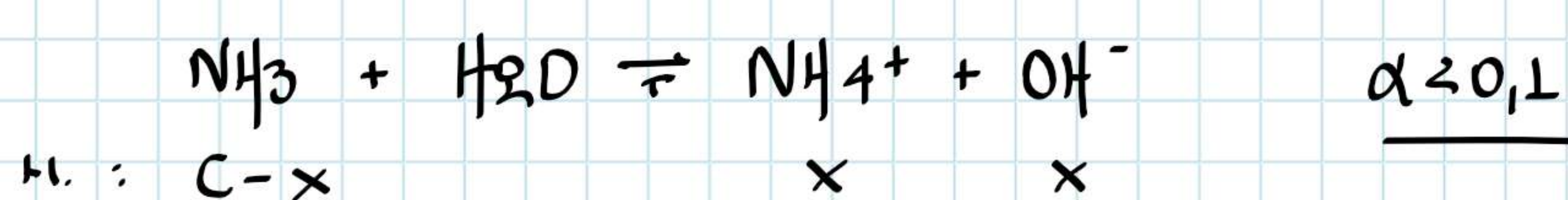
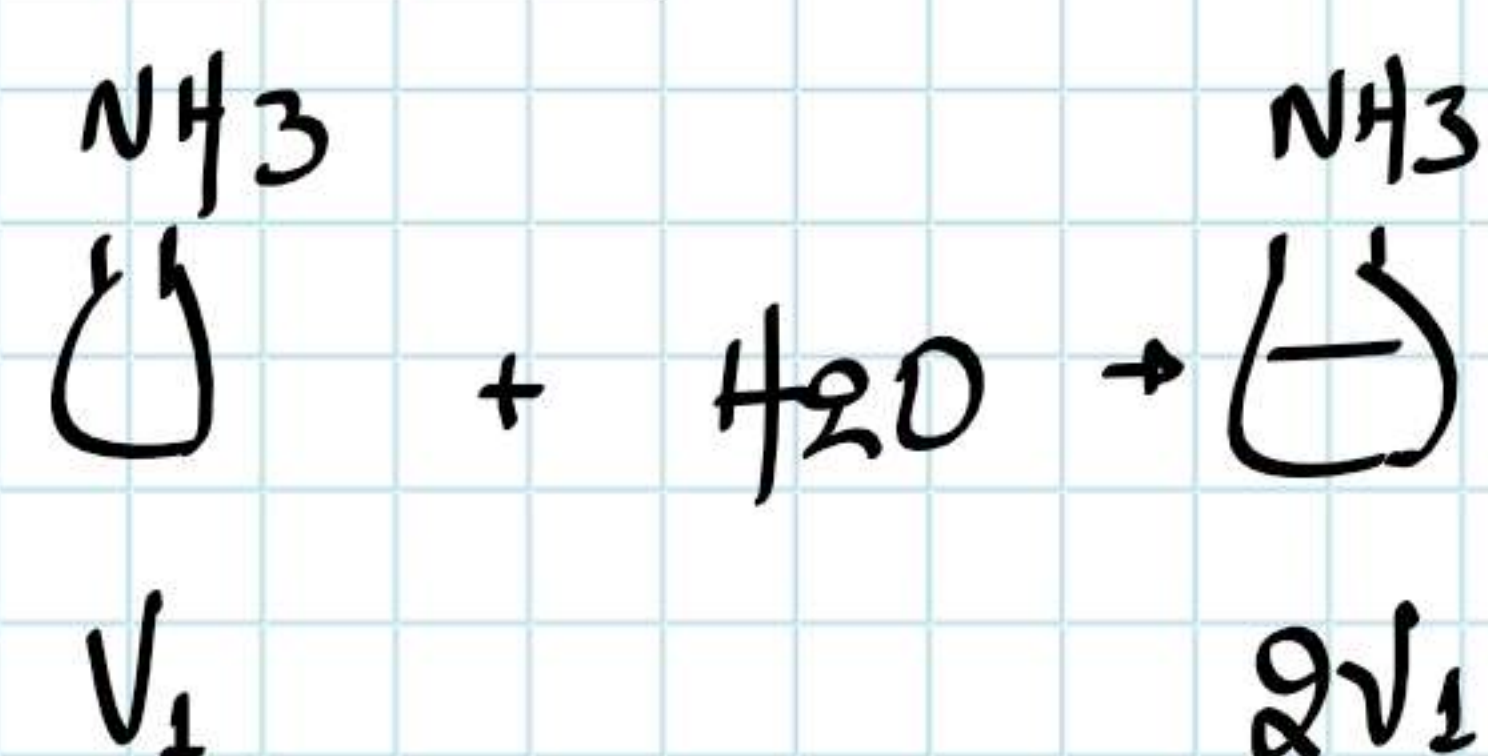
α) Σ β) Λ γ) Σ δ) Λ ε) Σ στ) Σ ζ) Σ η) Σ θ) Λ ι) Λ

Άσκηση 6.4.

α) ii β) iii Η CH_3NH_2 είναι αδρανής λειτουργική βάση

δ) ii/iii ε) iv

Άσκηση 6.5.



$$K_b = \frac{[\text{OH}^-]^2}{C - [\text{OH}^-]} \approx \frac{[\text{OH}^-]^2}{C} \quad K_b = \frac{\alpha^2 \cdot C}{1 - \alpha} \approx \alpha^2 \cdot C$$

Προσθέτουμε νερό, άρα έχουμε αραιώσεις: $C_1 \cdot V_1 = C_2 \cdot V_2 \Rightarrow C_1 \cdot \frac{V_1}{2} = C_2 \cdot 2 \cdot \frac{V_1}{2} \Rightarrow C_1 = 4 \cdot C_2$

α) $\alpha_{\text{NH}_3} = 3$ $\downarrow C_2$ $\uparrow \alpha_2$

$$\left. \begin{array}{l} \text{αρχικά: } K_b = \alpha_1^2 \cdot C_1 \\ \text{τελικά: } K_b = \alpha_2^2 \cdot C_2 \end{array} \right\} K_b = \text{σταθ.} \Rightarrow$$

$$\alpha_1^2 \cdot C_1 = \alpha_2^2 \cdot C_2 \Rightarrow \alpha_1^2 \cdot 2C_2 = \alpha_2^2 \cdot C_2$$

$$\Rightarrow \frac{\alpha_1}{\alpha_2} = \frac{1 \cdot \sqrt{2}}{\sqrt{2} \cdot \sqrt{2}} = \frac{\sqrt{2}}{2} = \frac{1,41}{2} < 1 \quad \text{δηλ. } \alpha_1 < \alpha_2$$

β) $[\text{OH}^-] = 3$ $\downarrow C$ $\downarrow [\text{OH}^-]$

$$\left. \begin{array}{l} \text{αρχικά: } K_b = \frac{[\text{OH}^-]_1^2}{C_1} \\ \text{τελικά: } K_b = \frac{[\text{OH}^-]_2^2}{C_2} \end{array} \right\} K_b = \text{σταθ.} \Rightarrow$$

$$\frac{[\text{OH}^-]_1^2}{C_1} = \frac{[\text{OH}^-]_2^2}{C_2} \Rightarrow \frac{[\text{OH}^-]_1^2}{2 \cdot C_2} = \frac{[\text{OH}^-]_2^2}{C_2}$$

$$\Rightarrow \frac{[\text{OH}^-]_1^2}{[\text{OH}^-]_2^2} = 2 \Rightarrow \frac{[\text{OH}^-]_1}{[\text{OH}^-]_2} = \sqrt{2}$$

γ) $\eta_{\text{OH}^-} = 3$

$$\left. \begin{array}{l} \text{αρχικά: } \alpha_1 = \frac{\eta_{\text{OH}^-}(1)}{\eta_{\text{αρχ}}} \\ \text{τελικά: } \alpha_2 = \frac{\eta_{\text{OH}^-}(2)}{\eta_{\text{τελ}}} \end{array} \right\} \eta_{\text{αρχ}} = \eta_{\text{τελ}} \Rightarrow$$

$$\frac{\alpha_1}{\alpha_2} = \frac{\frac{\eta_{\text{OH}^-}(1)}{\eta_{\text{αρχ}}}}{\frac{\eta_{\text{OH}^-}(2)}{\eta_{\text{τελ}}}} \Rightarrow \frac{\alpha_1}{\sqrt{2} \cdot \alpha_1} = \frac{\eta_{\text{OH}^-}(1)}{\eta_{\text{OH}^-}(2)} \Rightarrow$$

$$\eta_{\text{OH}^-}(2) > \eta_{\text{OH}^-}(1)$$