

3. HS^- 既是酸又是碱

O^{2-} 是碱

H_2PO_4^- 既是酸又是碱

NH_3 是碱

H_2S 是酸

HCl 是酸

Ac^- 是碱

OH^- 是碱

H_2O 是酸



0.05

0

0

$0.05 - x_1$

x_1

x_1

$0.01 - x_1$

x_2

x_1

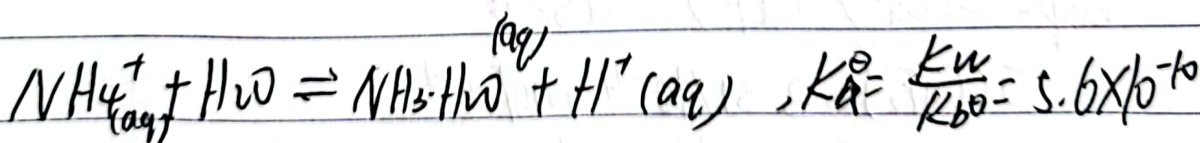
$$K_a^\theta = \frac{x_1}{0.05 - x_1} = \frac{x_1}{0.05}$$

$$x_1 = \sqrt{0.05 \cdot K_a^\theta} = 9.38 \times 10^{-4} \text{ mol} \cdot \text{L}^{-1}, \text{pH} = 3$$

$$K_a^\theta = \frac{x_2}{0.01 - x_2} = \frac{x_2}{0.01}$$

$$x_2 = \sqrt{0.01 \cdot K_a^\theta} = 4.19 \times 10^{-4} \text{ mol} \cdot \text{L}^{-1}, \text{pH} = 3.37$$

10.



$$\frac{C(\text{H}^+) \cdot C(\text{NH}_3 \cdot \text{H}_2\text{O})}{C(\text{NH}_4^+)} = K_a^\theta$$

$0.1 - x$

x

x

$$\frac{x^2}{0.1 - x} = K_a^\theta = \frac{x^2}{0.1}$$

$$x = \sqrt{0.1 \cdot K_a^\theta} = 7.5 \times 10^{-6} \text{ mol} \cdot \text{L}^{-1}$$

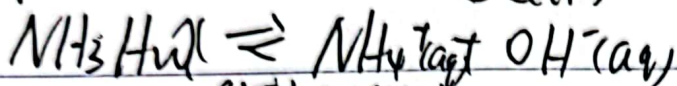


$$12. K_a = 1.8 \times 10^{-5}$$

稀释至 1L

$$C(\text{NH}_3 \cdot \text{H}_2\text{O}) = 0.01 \text{ mol} \cdot \text{L}^{-1}$$

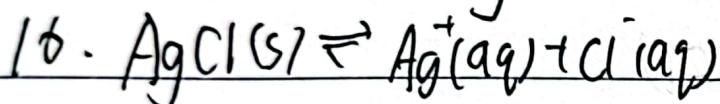
$$\text{pH} = 9.4 \Rightarrow C(\text{OH}^-) = \frac{K_w}{C(\text{H}^+)} = 10^{-4.6} \text{ mol} \cdot \text{L}^{-1}$$



$$K_a = \frac{C(\text{NH}_4^+) \cdot C(\text{OH}^-)}{C(\text{NH}_3 \cdot \text{H}_2\text{O})} \rightarrow C(\text{NH}_4^+) = \frac{K_a \cdot C(\text{NH}_3 \cdot \text{H}_2\text{O})}{C(\text{OH}^-)} = 7.2 \times 10^{-3} \text{ mol/L}$$

$$n = CV = 7.2 \times 10^{-3} \text{ mol}$$

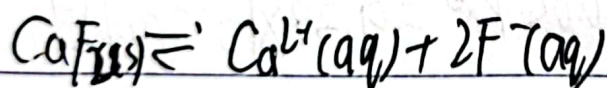
$$m = n \cdot M = 385.2 \text{ g}$$



$$C(\text{Ag}^+) \cdot C(\text{Cl}^-)$$

$$= S(\text{AgCl}) = K_{sp}$$

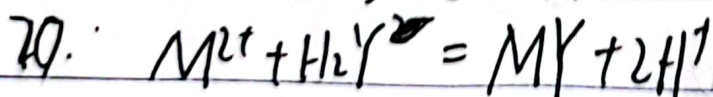
$$S = 1.33 \times 10^{-5} \text{ mol} \cdot \text{L}^{-1}$$



$$S \quad S \quad 2S$$

$$K_{sp} = C(\text{Ca}^{2+}) \cdot C(\text{F}^-)^2 = 4S^3$$

$$S(\text{CaF}_2) = 3.31 \times 10^{-4} \text{ mol} \cdot \text{L}^{-1}$$



$$n(\text{M}^{2+}) = n(\text{H}_2\text{Y}^{2-}) = 0.01048 \cdot 14.2 \times 10^{-3}$$

$$C(\text{M}^{2+}) = \frac{n(\text{M}^{2+})}{V(\text{M}^{2+})} = 1.488 \times 10^{-3} \text{ mol} \cdot \text{L}^{-1}$$

