

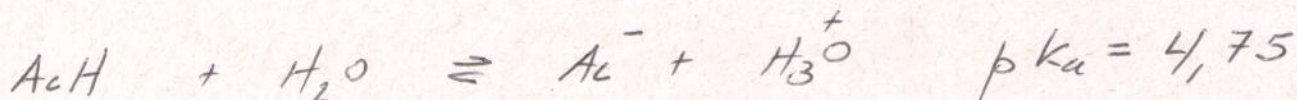
4

(C) 100 mL ácido acético + 20 mL acetato Na
 1,0 mol/L 2,0 mol/L

$$[\text{ác. acético}] = 1,0 \text{ mol/L} \cdot \left(\frac{100}{120}\right) =$$

$$[\text{acetato}] = 2,0 \cdot \left(\frac{20}{120}\right) =$$

DILUIÇÃO!

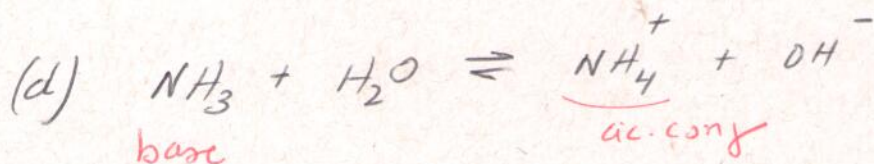


$$pH = pK_a + \log \frac{[\text{acetato}]}{[\text{Ac. Acético}]}$$

$$pH = 4,75 + \log \left(\frac{2 \cdot (2/12)}{10/12} \right)$$

$$pH = 4,75 + \log (4/10) = 4,75 - 0,4$$

$$pH = 4,35$$



$$pH = pK_b + \log \frac{[\text{ac. conj}]}{[\text{base}]}$$

$$pK_b = 4,75$$

$$[\text{NH}_4^+] = 0,3 \cdot \left(\frac{50}{200}\right)$$

$$[\text{NH}_3] = 0,1 \cdot \left(\frac{150}{200}\right)$$

DILUIÇÃO!

$$pH = 4,75 + \log \frac{[\text{NH}_4^+]}{[\text{NH}_3]}$$

$$pH = pK_b = 4,75$$

$$[\text{NH}_4^+]/[\text{NH}_3] \equiv 1,0$$

⑤ Eq. H. H.

$$pH = pK_a + \log \frac{[base\ conj]}{[ácido]}$$

Assim:

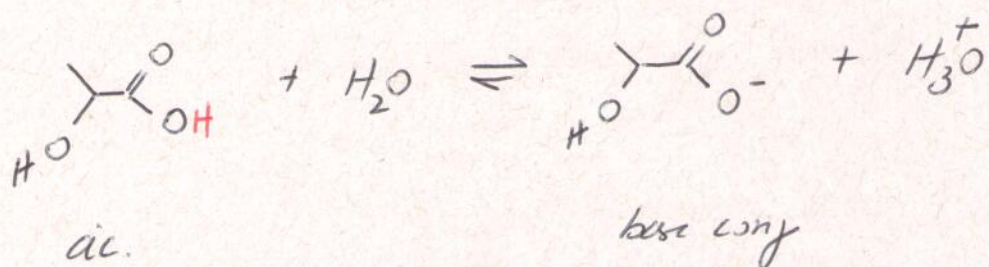
$$\log \frac{[base\ conj]}{[ácido]} = pH - pK_a = 0,5$$

$$\frac{[base\ conj]}{[ácido]} = 10^{0,5} \quad \text{ou} \quad 10^{-0,5}$$

p/ uma unidade $\frac{[base\ conj]}{[ácido]} = 10$

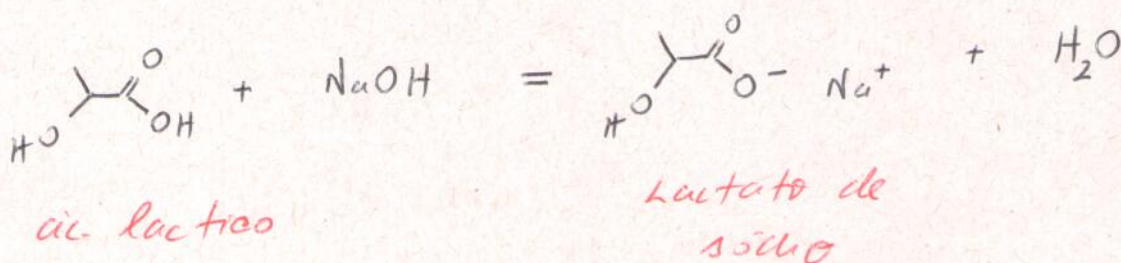
⑥ para $pH = pK_a \Leftrightarrow [base\ conj] = [ácido]$

⑦ Ác Lático



$\text{pK}_a = 3,85$

titulação



$[\text{NaOH}] = 0,05 \text{ mol/L}$ $V_{\text{titulado}} = 20 \text{ mL}$

$n^\circ \text{ mols NaOH} = 0,05 \times 20 \times 10^{-3} = 10^{-3} \text{ mols}$

$n^\circ \text{ mol Ác Láctico} = 10^{-3} \text{ mols em } 50 \text{ mL}$

$[\text{ác láctico}]_{\text{original}} = \frac{10^{-3} \text{ mols}}{5 \times 10^{-2} \text{ L}} = 2,0 \times 10^{-2} \text{ mol/L}$

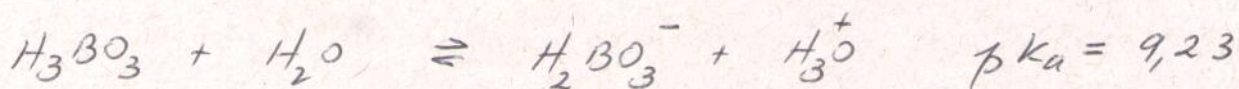
(a) $2,0 \times 10^{-2} \text{ mol/L}$

(b) cálculos da conc de lactato de sódio $\text{C}_3\text{H}_5\text{O}_3\text{Na}$

112 g/mol $[\text{C}_3\text{H}_5\text{O}_3\text{Na}] = \frac{2\text{g}/112 \text{ g/mol}}{0,1 \text{ L}} = 0,1786 \text{ mol/L}$

$\text{pH} = \text{pK}_a + \log \frac{[\text{lactato Na}]}{[\text{ác Láctico}]} = 3,85 + \log \left(\frac{0,1786}{0,02} \right) = 4,8$

⑧ Ac. Borico H_3BO_3

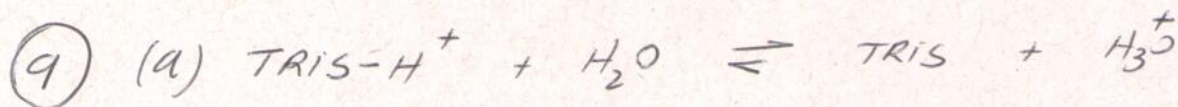


$$pH = pK_a + \log \frac{[borate]}{[Ac. borico]} = 8,3$$

Arrim

$$\log \frac{[borate]}{[Ac. borico]} = 8,30 - 9,23 = -0,93$$

$$\text{ou} \quad \frac{[Ac. borico]}{[borate]} = 10^{0,93} = 8,5$$



$$pH = pK_a + \log \frac{[TRIS]}{[TRIS-H^+]} = 8,3 + \log \frac{(0,025/2)}{(0,1/2)}$$

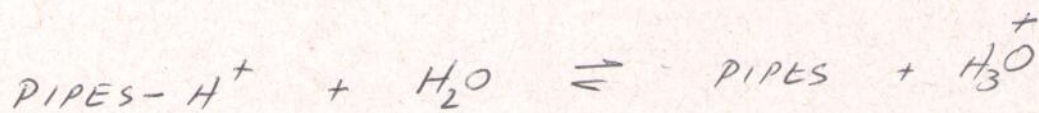
$$pH = 8,3 + (-0,60) = 7,7$$

(b) p/ MOPS $pH = pK_a + \log \frac{[MOPS]}{[MOPS-H^+]} = 7,0$

$$pK_a = 7,2$$

$$\log \frac{[MOPS-H^+]}{[MOPS]} = 0,2 \Rightarrow \frac{[MOPS-H^+]}{[MOPS]} = 10^{0,2} = 1,58$$

9) continuação



$$pK_a = 6,8$$

Assim por similaridade

$$F_u = 6,8 + \log \frac{[\text{PIPES}]}{[\text{PIPES} - \text{H}^+]}$$

$$\frac{[\text{PIPES}]}{[\text{PIPES} - \text{H}^+]} \quad \text{ou} \quad \frac{[\text{PIPES} - \text{H}^+]}{[\text{PIPES}]} = 10^{-0,2} = \frac{1}{1,58} = 0,63$$

