

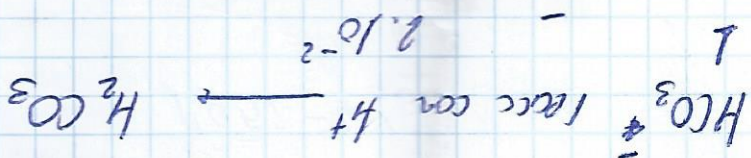
Examen 2005 (Defina)

Calc. el pH al agregar 1 mL HCl 0.1 M a 500 mL de disol. 1 M de NaHCO_3 (Bicarbonato sódico en agua).

$$\text{p}K_{a1}[\text{H}_2\text{CO}_3] = 6.4$$

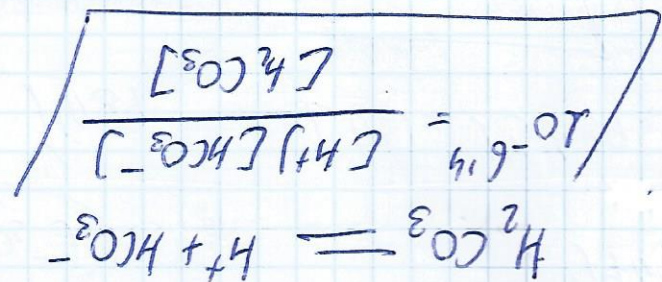
$$\text{p}K_{a2}[\text{HCO}_3^-] = 10.3$$

$$\begin{aligned} \text{moles HCl} &= 0.1 \cdot 2 \cdot 10^{-3} = 2 \cdot 10^{-2} \text{ n} \\ \text{n}[\text{HCO}_3^-] &= 0.15 \cdot 2 = 1 \text{ moles} \end{aligned}$$

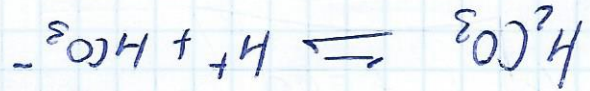


Quedan 0.05 moles HCO_3^- y 2.10⁻² moles H_2CO_3

tengo en disolución HCO_3^- y H_2CO_3



$$\frac{[\text{H}^+][\text{HCO}_3^-]}{[\text{H}_2\text{CO}_3]} = 10^{-6.4}$$



$$\begin{aligned} \frac{2 \cdot 10^{-2} - x}{x} \cdot \frac{x}{x + 0.05} &= 10^{-6.4} \\ x &= 2.6 \cdot 10^{-9} \end{aligned}$$

$$\begin{aligned} \text{pH} &= -\log[\text{H}^+] \\ \text{pH} &= 8.12 \end{aligned}$$

(tengo enough est. para el cálculo de la constante de equilibrio)