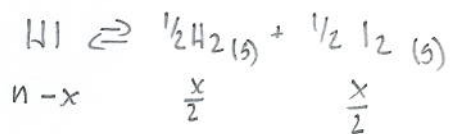


Ejercicios - UNIDAD 3

① ASUMAMOS "n" MOLES DE HI Y UN VOLUMEN "V": $[HI]_0 = \frac{n}{V}$



Pero $\frac{x}{n} = 0,214$

$x = (0,214)(n)$

REEMPLAZAMOS

$$K_c = \frac{[H_2]^{1/2} [I_2]^{1/2}}{[HI]} = \frac{\left(\frac{0,107n}{V}\right)^{1/2} \left(\frac{0,107n}{V}\right)^{1/2}}{\frac{0,786n}{V}} = \frac{\frac{0,107n}{V}}{\frac{0,786n}{V}} = \underline{\underline{0,136}}$$

② $N_2(g) + 3H_2(g) \rightleftharpoons 2NH_3(g) \quad \Delta n = -2$

$$K_c = \frac{K_p}{(RT)^{\Delta n}} = \frac{1,44 \times 10^{-5}}{(0,082 \cdot 773)^{-2}} = \underline{\underline{0,058}}$$

③ $PCl_5(g) \rightleftharpoons PCl_3(g) + Cl_2(g)$

0,557 atm - x

x

x

$$27,1g \left(\frac{1 \text{ mol}}{208,15g} \right) = 0,13 \text{ mol}$$

$$P_{\text{inicial}} = \frac{nRT}{V} = \frac{(0,13)(0,082)(523)}{10}$$

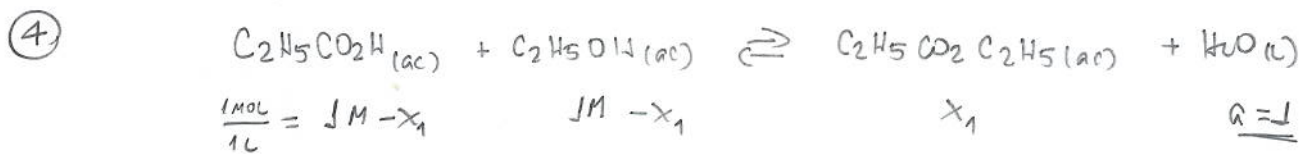
y $(0,557 - x) + x + x = 1 \text{ atm}$

$x = \underline{\underline{0,443 \text{ atm}}}$

$P_{\text{inicial}} = \underline{\underline{0,557 \text{ atm}}}$

$$K_p = \frac{P_{PCl_3} \cdot P_{Cl_2}}{P_{PCl_5}} = \frac{(0,443)(0,443)}{0,114} = \underline{\underline{1,72}}$$

$$\alpha = \frac{0,443}{0,557} = 0,795 = \underline{\underline{79,5\%}}$$



$$x_1 = \frac{0,73 \text{ mol}}{1 \text{ L}} = 0,73 \text{ M}$$

$$K_c = \frac{(0,73 \text{ M})}{(1 - 0,73)^2} = \underline{\underline{10}}$$

Ahora hay más ácido $\text{C}_2\text{H}_5\text{CO}_2\text{H}$:

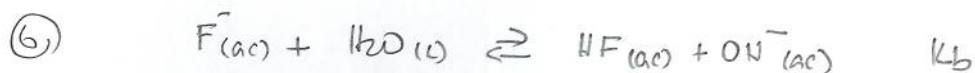
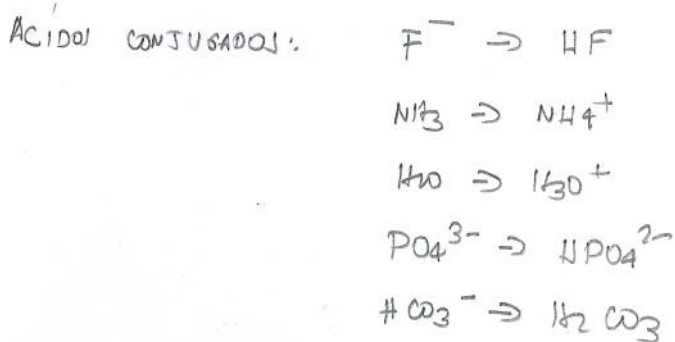
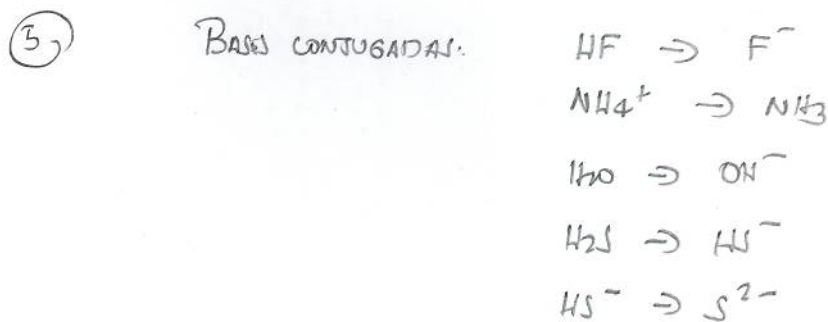
$$2 \text{ M} - x_2$$

$$1 \text{ M} - x_2$$

$$x_2$$

$$\frac{(1 - x_2)}{(2 - x_2)(1 - x_2)} = 10 \quad \rightarrow \quad x_2 = \underline{\underline{0,915 \text{ M}}} \quad \text{Se forma más éster}$$

LOGICO, HEMOS PUESTO MÁS CANTIDAD DE UN REACTIVO: SE FAVORECE EL SENTIDO DIRECTO.



PERO PARA PARES CONJUGADOS SE CUMPLE: $K_a \times K_b = K_w = 10^{-14}$

$$K_b = \frac{10^{-14}}{7,1 \times 10^{-4}} = \underline{\underline{1,41 \times 10^{-11}}}$$

