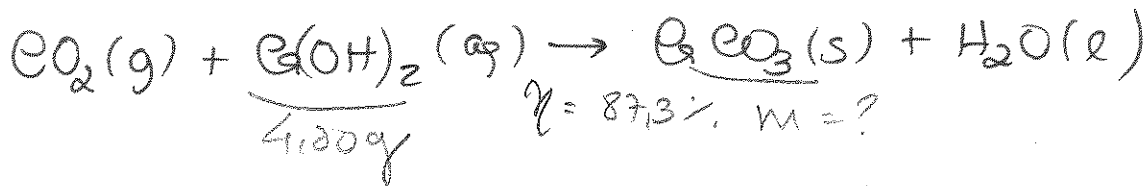


Fiche de Travail 13

1



2.1

$$n = \frac{m}{M} = \frac{4,00}{57,09} = 0,070 \text{ mol}$$



$$0,070 \text{ mol --- } x$$

$$x = 0,070 \text{ mol CaCO}_3$$

$$m = n \times M = 0,070 \times 100,09 = 7,0 \text{ g}$$

$$\begin{array}{l} 7,0 \text{ g --- } 100\% \\ x \text{ --- } 87,3\% \end{array} \quad x = 6,12 \text{ g CaCO}_3$$

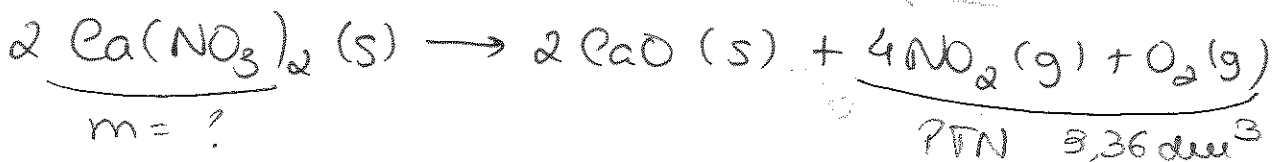
2.2



$$x \text{ --- } 0,070 \text{ mol}$$

$$x = 0,070 \text{ mol CO}_2$$

2



$$n = \frac{V}{V_m} = \frac{3,36}{22,4} = 0,15 \text{ mol}$$

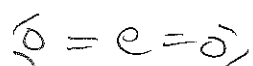
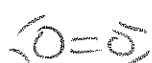
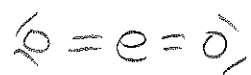


$$x \text{ --- } 0,15 \text{ mol}$$

$$x = 0,06 \text{ mol}$$

$$m = n \times M = 0,06 \times 164 = 9,84 \text{ g Ca}(\text{NO}_3)_2$$

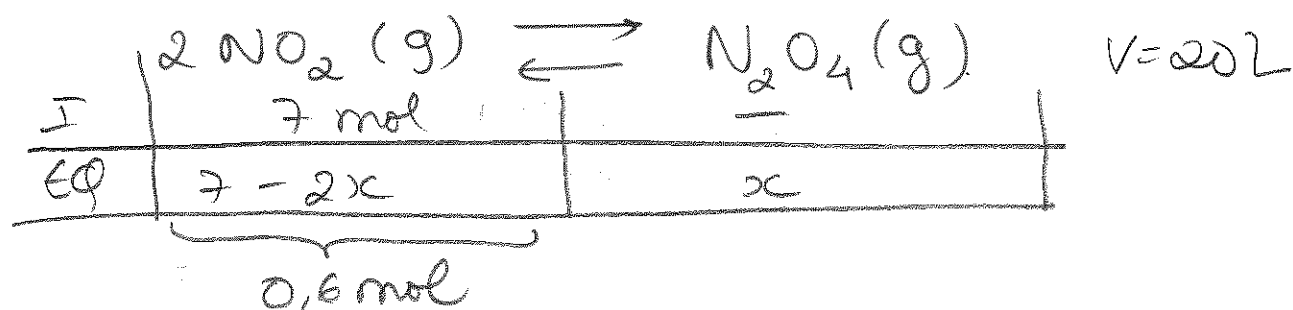
0,9305 e



$$\Delta H = 4E(\text{C}=\text{O}) - 2E(\text{C}\equiv\text{O}) - E(\text{O}=\text{O})$$

$$550 = 4x - 2 \times 1076 - 498$$

$$x = 800 \text{ kJ/mol}$$



$$7 - 2x = 0,6$$

$$x = \frac{0,6 - 7}{-2}$$

$$x = 3,2 \text{ mol}$$

$$K_c = \frac{[\text{N}_2\text{O}_4]_e}{[\text{NO}_2]_e^2} = \frac{\frac{3,2}{20}}{\left(\frac{0,6}{20}\right)^2} = 177,8$$



500K $K_c = 2,22 \times 10^{-2}$

760K $K_c = 33,3$

$\uparrow T \Rightarrow K_c \uparrow$

logo como $\uparrow T \xrightarrow{p.e} \downarrow T$ endotérmica
 logo como $\uparrow T \xrightarrow{p.e} \uparrow T$ direto } a reação direta é endotérmica.

A) Verdadeira

B) decomposição $\xrightarrow{\text{direta}}$ endotérmica logo $T \downarrow$
 no meio exterior se sistema fechado

False

C) Verdadeira, se é isolado tem que in fluxar a energia a (mesmo).

D) $\downarrow T \xrightarrow{p.e} \uparrow T$ exotérmica \leftarrow inversa $\uparrow [p.d.s]$

Verdadeira.

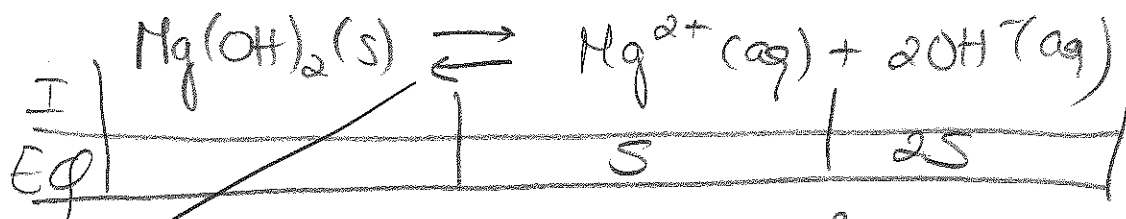
6) $K_w (40^\circ C) = 2,88 \times 10^{-14}$

$pH + pOH = pK_w$

neutra $pH = pOH$ $2x = -\log 2,88 \times 10^{-14}$

$x = 6,77$

7) $K_s (Mg(OH)_2) = 1,8 \times 10^{-11}$ $pH = ?$ $25^\circ C$



$K_s = [Mg^{2+}][OH^-]^2$

logo como $\uparrow T \xrightarrow{p.e} \downarrow T$ endotérmica
 logo como $\uparrow T \xrightarrow{p.e} \uparrow$ direto } a reação direta é endotérmica.

A) Verdadeira

B) decomposição \xrightarrow{direta} endotérmica logo $T \downarrow$
 no meio extensa se sistema fechado

Falsa

C) Verdadeira, se é isolado tem que in bexar a energia a o mesmo.

D) $\downarrow T \xrightarrow{p.e} \uparrow T$ exotérmica \leftarrow inversa $\uparrow [P.O_5]$

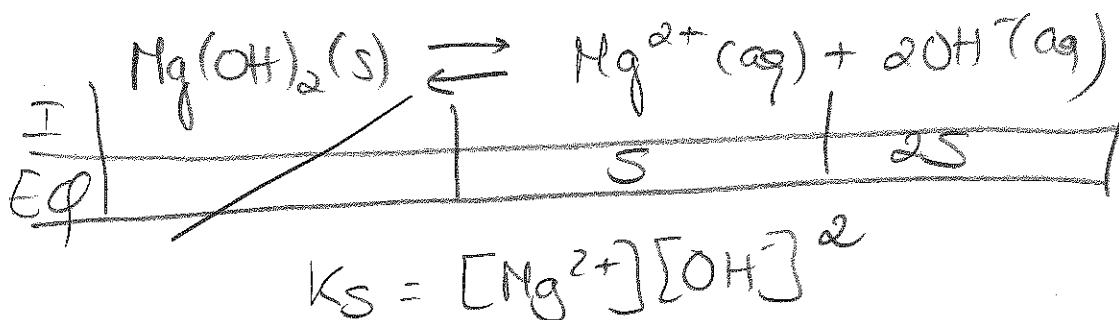
Verdadeira.

6) $K_w(40^\circ C) = 2,88 \times 10^{-14}$

$pH + pOH = pK_w$

neutra $pH = pOH \dots 2x = -\log 2,88 \times 10^{-14}$
 $x = 6,77$

7) $K_s(Mg(OH)_2) = 1,8 \times 10^{-11}$ $pH = ?$ $25^\circ C$



$$1,8 \times 10^{-11} = S \times (2S)^2$$

$$1,8 \times 10^{-11} = 4S^3$$

$$S = \sqrt[3]{\frac{1,8 \times 10^{-11}}{4}}$$

$$S = 1,65 \times 10^{-4} \text{ mol/dm}^3$$

$$[\text{OH}^-] = 2S = 2 \times 1,65 \times 10^{-4} = 3,3 \times 10^{-4} \text{ mol/dm}^3$$

$$\text{pOH} = -\log [\text{OH}^-] = -\log 3,3 \times 10^{-4} = 3,48$$

$$\text{pH} + \text{pOH} = 14 \quad (25^\circ\text{C})$$

$$\text{pH} = 14 - 3,48$$

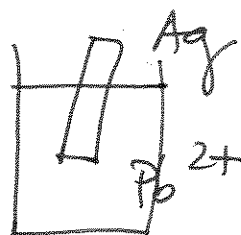
$$\text{pH} = 10,52$$

8

Situação X



Situação Y



Pb maior redutor



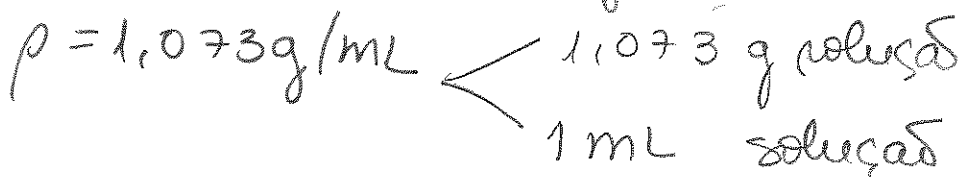
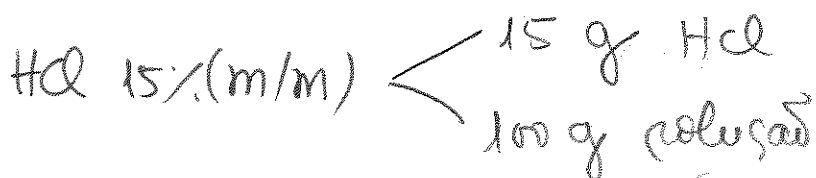
logo vai oxidar-se $\text{Pb} \rightarrow \text{Pb}^{2+}$

logo vai reduzir o outro $\text{Ag}^+ \rightarrow \text{Ag}$

logo só é possível isso na situação X

Opção D

9



9.1

$$n = \frac{m}{M} = \frac{15}{36,46} = 0,41 \text{ mol HCl}$$



$$x = \frac{100 \times 1}{1,073} = 93,2 \text{ mL solução}$$

$$[\text{HCl}] = \frac{n}{V} = \frac{0,41}{0,0932} = 4,4 \text{ mol/dm}^3$$



$$[\text{HCl}] = [\text{H}^+] = 4,4 \text{ mol/dm}^3$$

$$\text{pH} = -\log [\text{H}^+] = -\log 4,4 = -0,64$$

9.2



qdo adicionamos ácido a $[\text{OH}^-]$ vai diminuir fazendo, pLe, evoluir a 2ª reação no sentido direito, logo $\downarrow [\text{CO}_3^{2-}]$ e fazendo a 1ª reação evoluir no sentido direito no sentido de

Solubilizar CaCO_3

$$(10) K_s(\text{CaSO}_4) = 9,1 \times 10^{-6}$$



$$\text{SO}_4^{2-} \quad 1,4 \text{ mg/L} \quad \rightarrow \text{mol/dm}^3$$

$$n = \frac{m}{M} = \frac{1,4 \times 10^{-3}}{96,07} = 1,46 \times 10^{-5} \text{ mol}$$

$$\text{Ca}^{2+} \quad 20,6 \text{ mg/L} \quad \rightarrow \text{mol/dm}^3$$

$$n = \frac{m}{M} = \frac{20,6 \times 10^{-3}}{40,08} = 5,14 \times 10^{-4} \text{ mol}$$

$$Q = [\text{Ca}^{2+}][\text{SO}_4^{2-}]$$

$$Q = 5,14 \times 10^{-4} \times 1,46 \times 10^{-5}$$

$$Q = 7,5 \times 10^{-9} < K_s$$

Logo não ocorre precipitação.