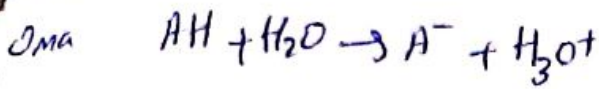


Correction Chimie 2017

Q21



Omsait $n(x) = \frac{m}{M} = C \cdot V$

$\Rightarrow C = \frac{m}{V \cdot M}$

AN

$C = \frac{0,44}{250 \times 10^{-3} \times 176} = \frac{44 \times 10^{-2}}{25 \times 10^{-2} \times 176}$

$= \frac{4 \times 11}{25 \times 4 \times 4 \times 11}$

$= \frac{1}{100} = \boxed{10^{-2} \text{ mol}}$

Q22

$\tau = \frac{x_f}{x_{\text{tot}}} = \frac{[H_3O^+]}{C} = \frac{10^{-3,1}}{10^{-2}}$

$\tau = \frac{8 \times 10^{-4}}{10^{-2}} \Rightarrow \boxed{\tau = 8 \cdot 10^{-2}}$

Q23

$\tau \cdot C = [H_3O^+]$

$K_A = \frac{[H_3O^+]^2}{C - [H_3O^+]} = \frac{\tau^2 \cdot C^2}{C - \tau \cdot C} = \frac{\tau^2 \cdot C}{1 - \tau}$

or $C = \frac{[H_3O^+]}{\tau}$

$K_A = \frac{\tau^2}{1 - \tau} \cdot \frac{[H_3O^+]}{\tau}$

$\boxed{K_A = \frac{\tau}{1 - \tau} \cdot 10^{-pH}}$

Q24

$K_A = \frac{\tau \cdot 10^{pH}}{1 - \tau}$

AN

$K_A = \frac{8 \cdot 10^{-2} \cdot 8 \cdot 10^{-4}}{1 - 8 \cdot 10^{-2}}$

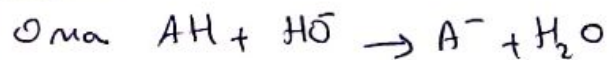
$K_A = \frac{64 \cdot 10^{-6}}{1 - 0,08}$

$\frac{1,66}{0,92}$

$K_A = \frac{64 \times 10^{-6}}{92 \cdot 10^{-2}}$

$K_A = 0,7 \times 10^{-4} \Rightarrow \boxed{K_A = 7 \times 10^{-5}}$

Q25:



meq:

On a $C_S V_S = C_B V_{\text{Bep}}$ (à l'équivalence)

$\Rightarrow C = \frac{C_B V_{\text{Bep}}}{V_S}$

on omsait que $C_S \cdot V_S = \frac{m}{M}$

$\Rightarrow C_S = \frac{m}{M \cdot V_S}$

$\Rightarrow \frac{m}{M \cdot V_S} = \frac{C_B \cdot V_{\text{Bep}}}{V_S}$

$\Rightarrow m_{\text{eq}} = C_B \cdot V_{\text{Bep}} \cdot M$

AN

$m_{\text{eq}} = 1,5 \times 10^{-4} \times 12,8 \times 10^3 \times 206$

$m_{\text{eq}} = 309 \times 12,8 \times 10^{-4}$

$m_{\text{eq}} = 3,96 \times 10^3 \times 10^{-4}$

$\frac{206}{15} = 13,73$
 $\frac{1030}{309,6} = 3,32$

$$m_{\text{ep}} = 3,96 \times 10^{-2} \text{ g}$$

$$m_{\text{ep}} = 396 \times 10^{-3} \text{ g}$$

$$m_{\text{ep}} = 396 \text{ mg}$$

FACUL Q26 : d'écart relatif

$$\text{Concours} \\ \text{Epreuve} \quad \gamma = \left(\frac{m(\text{réel})}{m(\text{final})} - 1 \right) \times 100$$

Exercis
1. Pam
1. M
2. Lot

$$\gamma = \left(\frac{400}{396} - 1 \right) \times 100$$

3. Le
d'éc
4. I

$$\gamma = (1,01 - 1) \times 100$$

5. ol
7

$$\gamma = 0,01 \times 100$$

$$\gamma = 1\%$$

$$\begin{array}{r} 400,00 \\ 396 \overline{) 400,00} \\ \underline{396} \\ 40 \\ \underline{396} \\ 400 \end{array}$$

$$\begin{array}{r} 1,01 \\ - 1,00 \\ \hline 0,01 \end{array}$$

on, on a à $t = 3 \text{ min}$ $x = 5 \cdot 10^{-4}$

$$\Rightarrow \text{à } t = 3 \text{ min } x = \frac{x_{\text{max}}}{2}$$

$$\text{donc } t = 3 \text{ min} = t_{\frac{1}{2}}$$

Q29

$$\text{On a } n(A) = \frac{V(A)}{V_m}$$

V_m : Volume molaire

$$\Rightarrow V(A) = n(A) \cdot V_m$$

$$\Rightarrow V(A) = C \cdot V \cdot V_m$$

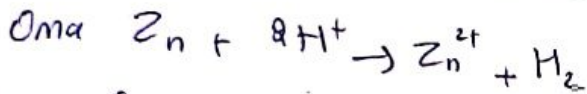
$$\Rightarrow V(A) = 1 \cdot 100 \times 10^{-2} \cdot 24$$

$$\Rightarrow V_A = 24 \times 10^{-2} \text{ l}$$

$$\Rightarrow V_A = 2,4 \text{ L}$$

$$A = \text{H}_2$$

Q27



On a la réaction est totale

$$\text{donc } x_{\text{max}} = n(\text{Zn})$$

$$\text{donc } x_{\text{max}} = \frac{m(\text{Zn})}{M(\text{Zn})}$$

AN

$$x_{\text{max}} = \frac{65,4 \times 10^{-3}}{65,4}$$

$$x_{\text{max}} = 10^{-3} \text{ mol}$$

Q28:

$$\text{On sait que } t_{\frac{1}{2}} = \frac{x_{\text{max}}}{2}$$

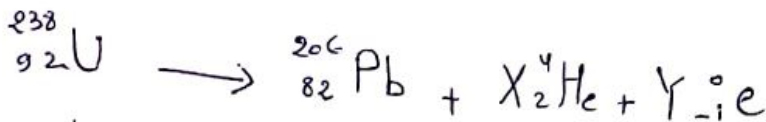
$$\frac{x_{\text{max}}}{2} = \frac{10^{-3}}{2} = \frac{10}{2} \times 10^{-4}$$

$$= 5 \cdot 10^{-4}$$

Correction 2017 Physique:

Ex2:

Q13:



D'après la loi de Soddy:

$$238 = 206 + 4x$$

$$92 = 82 + 2x - y$$

$$\Rightarrow \frac{238 - 206}{4} = x$$

$$\Rightarrow x = \frac{32}{4} = 8 \Rightarrow \boxed{x = 8}$$

donc $10 - 16 = -y$

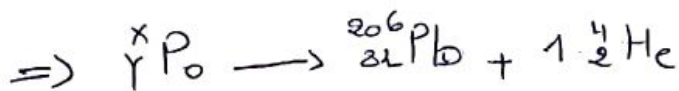
$$\Rightarrow \boxed{y = 6}$$

$$8 + 6 = 14$$

\Rightarrow le nombre des intégrations = (14)

⊙

Q14: On a Po donne Plomb 206
Après la dernière désintégration de type α .



$$\Rightarrow \begin{cases} x = 206 + 4 \\ x = 82 + 2 \end{cases} \Rightarrow \begin{cases} x = 210 \\ y = 84 \end{cases}$$

On s'intéresse au nombre de neutrons = $A - Z$

$$210 - 84 = \boxed{126} \quad \text{⊙}$$

Ex3:

Verification

Q15:

$$\text{On } I(t) = \pi \cdot 10^{-2} \cdot \cos\left(2\pi \cdot \frac{t}{T_0} + \frac{\pi}{2}\right)$$

$$= I(t) = I_{\text{max}} \cdot \cos(\omega_0 t + \varphi)$$

$$\text{et } I_{\text{max}} = \frac{2\pi}{T_0} \cdot C \cdot U_{\text{max}}$$

$$\Rightarrow I_{\text{max}} = \pi \cdot 10^{-2}$$

$$\Rightarrow \frac{2\pi}{T_0} \cdot C \cdot U_{\text{max}} = \pi \cdot 10^{-2}$$

Cherchons E

à $t=0$ $U_c = U_{\text{max}}$ (condensateur totalement chargé)

$$U_{c\text{max}} = 10 \cdot \cos\left(2\pi \cdot \frac{t}{T_0}\right)$$

$$\Rightarrow U_{c\text{max}} = 10 \cdot \underbrace{\cos(0)}_1$$

$$\Rightarrow \boxed{U_{c\text{max}} = E = 10\text{V}}$$

donc

$$\frac{2\pi \cdot C \cdot U_{\text{max}}}{T_0} = \pi \cdot 10^{-2}$$

$$\Rightarrow \frac{2\pi \cdot C \cdot U_{\text{max}}}{\pi \cdot 10^{-2}} = T_0$$

$$\Rightarrow \frac{2\pi \cdot 10^{-6} \cdot 10}{\pi \cdot 10^{-2}} = T_0$$

$$\Rightarrow 2 \cdot 10 \cdot 10^{-4} = T_0$$

$$\Rightarrow \boxed{2 \cdot 10^{-3} = T_0\text{s}} \Rightarrow \boxed{T_0 = 2\text{ms}}$$

Q16:

$$\text{Donc } T_0 = 2\pi\sqrt{LC}$$

$$\Rightarrow \left(\frac{T_0}{2\pi}\right)^2 = LC$$

$$\Rightarrow \left(\frac{T_0}{2\pi}\right)^2 \cdot \frac{1}{C} = L$$

AN

$$L = \left(\frac{2 \times 10^{-3}}{2\pi}\right)^2 \cdot \frac{1}{10^{-6}}$$

$$L = \frac{4 \times 10^{-6}}{4 \times 10} \times \frac{1}{10^{-6}} \quad \pi^2 \sqrt{10}$$

$$L = \frac{1}{10} = 0,1 \text{ H}$$

$$\Rightarrow \boxed{L = 100 \text{ mH}}$$

Q17:

Q_0 , on a à $t=0$ le condensateur est totalement chargé $U_c(t=0) = E$

$$\Rightarrow Q = C \cdot E$$

$$\Rightarrow Q = 10^{-6} \times 10$$

$$\Rightarrow \boxed{Q = 10^{-5} \text{ C}}$$