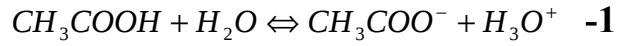


الأجوبة

تمرين 1:



2- جدول التقدم

3- $\sigma = \lambda_{H_3O^+} [H_3O^+]_{\text{éq}} + \lambda_{CH_3COO^-} [CH_3COO^-]_{\text{éq}}$

إذن $[H_3O^+]_{\text{éq}} = \frac{\sigma_{\text{éq}}}{\lambda_1 + \lambda_2}$

4- $\tau = \frac{x_{\text{éq}}}{x_{\text{max}}} = \frac{[H_3O^+]_{\text{éq}} * V}{C * V} = \frac{[H_3O^+]_{\text{éq}}}{C}$

5-

$\tau_1 = \frac{\sigma_1}{C_1(\lambda_1 + \lambda_2)} = \frac{3,5 \cdot 10^{-2}}{5 \cdot 10^{-2} * 10^3 * 38,99 \cdot 10^{-3}} = 1,8\%$

$\tau_2 = \frac{\sigma_2}{C_2(\lambda_1 + \lambda_2)} = \frac{1,1 \cdot 10^{-2}}{5 \cdot 10^{-3} * 10^3 * 38,99 \cdot 10^{-3}} = 5,6\%$

الإستنتاج : τ تتعلق بالحالة البدئية.

6- $K = \frac{[CH_3COO^-]_{\text{éq}} [H_3O^+]_{\text{éq}}}{[CH_3COOH]_{\text{éq}}} = \frac{[H_3O^+]_{\text{éq}}^2}{c - [H_3O^+]_{\text{éq}}} = \frac{c^2 \tau^2}{c - c \tau} = \frac{c \tau^2}{1 - \tau}$

7- $K_1 = \frac{c_1 \tau_1^2}{1 - \tau_1} = 1,65 \cdot 10^{-5}$

$K_2 = \frac{c_2 \tau_2^2}{1 - \tau_2} = 1,66 \cdot 10^{-5}$

الإستنتاج : K لا تتعلق بالحالة البدئية

تمرين 2:

1- $N(t) = N_0 e^{-\lambda t}$

2-

أ- $t' = \frac{-1}{\lambda} \ln 0,5$

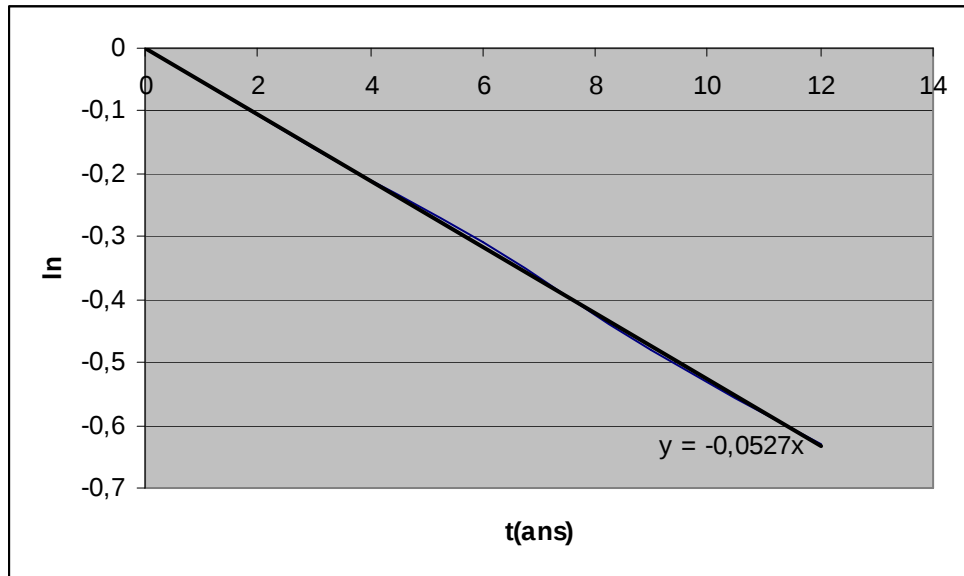
ب- t' تمثل عمر النصف.

3- $\ln\left(\frac{N(t)}{N_0}\right) = -\lambda t$

4-

$t(\text{ans})$	0	3	6	9	12
$\ln\left(\frac{N(t)}{N_0}\right)$	0	-0,16	-0,31	-0,48	-0,63

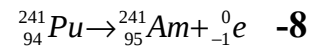
5-



-6 المعامل الموجه هو $a = -\lambda = \frac{0,63-0}{12-0} = -0,0525 \text{ans}^{-1}$

إن $\lambda = 0,0525 \text{ans}^{-1}$

-7 $t_{1/2} = \frac{\ln 2}{\lambda} = 13,20 \text{ ans}$



-9 $E = \{m(\text{Am}) + m(\text{e}) - m(\text{Pu})\}C^2 = -1,86.10^{-2} \text{Mev}$

-10 $E' = \frac{m}{M} N_a E = -4,65.10^{19} \text{Mev}$