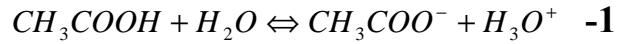


الأجوبة

تمرين 1:



جدول التقدم -2

$\sigma = \lambda_{H_3O^+} [H_3O^+]_{\acute{e}q} + \lambda_{CH_3COO^-} [CH_3COO^-]_{\acute{e}q}$  -3

إذن  $[H_3O^+]_{\acute{e}q} = \frac{\sigma_{\acute{e}q}}{\lambda_1 + \lambda_2}$

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

-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  $\tau$  تتعلق بالحالة البدئية.

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

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

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

الإستنتاج  $K$  لا تتعلق بالحالة البدئية

تمرين 2:

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

-2

أ-  $t' = \frac{-1}{\lambda} \ln 0,5$

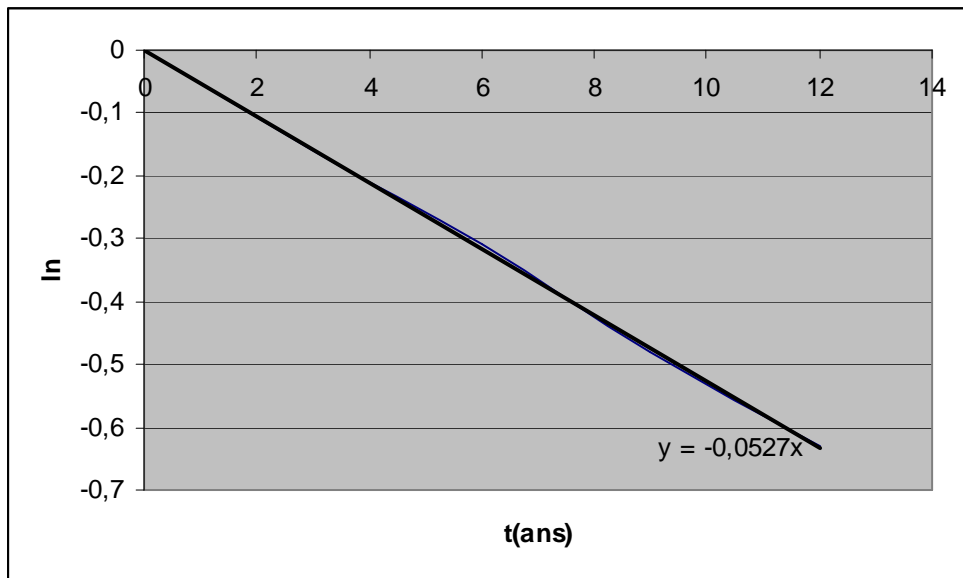
ب-  $t'$  تمثل عمر النصف.

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

-4

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

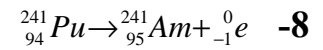
-5



-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  $E = \{m(\text{Am}) + m(\text{e}) - m(\text{Pu})\}C^2 = -1,86 \cdot 10^{-2} \text{Mev}$

-10  $E' = \frac{m}{M} N_a E = -4,65 \cdot 10^{19} \text{Mev}$