

أولاً :

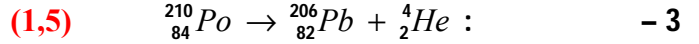
$\beta^- \quad \beta^+ \quad \alpha$

- 1

(2)  $\cdot \gamma$

(1,5)  $N = A - Z = 210 - 84 = 126$

$\cdot Z = 84$  : - 2

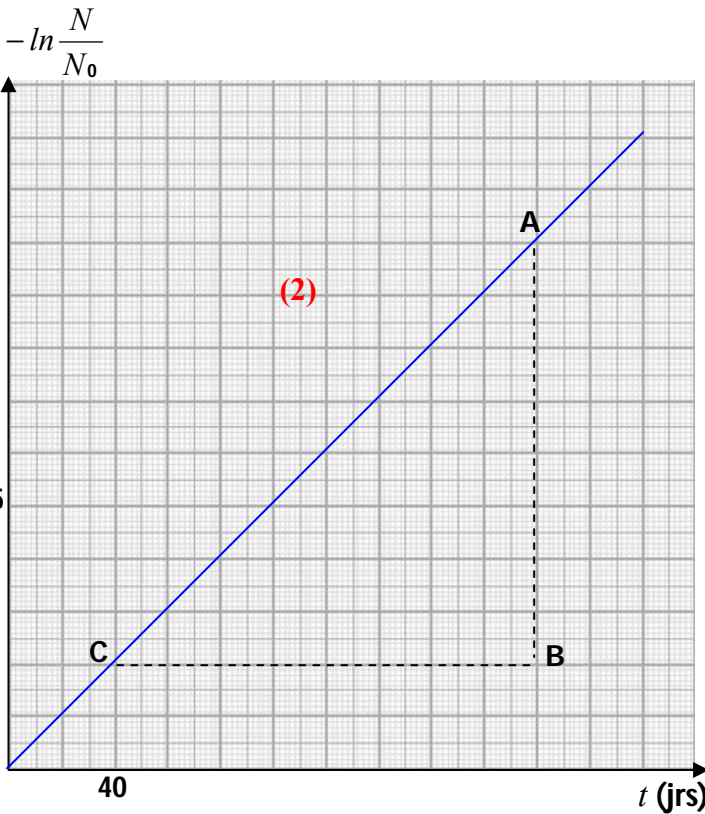


ثانياً :

- 1

t (jours)	0	40	80	120	160	200	240
$\frac{N}{N_0}$	1	0,82	0,67	0,55	0,45	0,37	0,30
$-\ln \frac{N}{N_0}$	0	0,20	0,40	0,60	0,80	1,0	1,2

(0,5)



(0,5)  $N = N_0 e^{-\lambda t}$  : - 3

$\frac{N}{N_0} = e^{-\lambda t}$

:

$-\ln \frac{N}{N_0} = \lambda t \quad \ln \frac{N}{N_0} = -\lambda t$

(1,5)  $y = a x$

(0,5)  $\cdot \lambda$  - 4

(2)  $\lambda = \frac{AB}{CB} = \frac{0,8}{8 \times 20 \times 24 \times 3600} = 5,8 \times 10^{-8} s^{-1}$

(1,5)  $t_{1/2} = \frac{0,7}{\lambda} = \frac{0,7}{5,8 \times 10^{-8}} = 1,2 \times 10^7 s = 139 jrs$

$0,1 = e^{-\lambda t}$  :

(1)  $m = \frac{m_0}{10}$

$m = m_0 e^{-\lambda t}$  - 5



(1,5)

$t = \frac{2,3}{\lambda} = \frac{2,3}{5,8 \times 10^{-8}} = 4,0 \times 10^7 s = 463 jrs$

$-2,3 = -\lambda t$

(0,5)

(1)  $A = \lambda N$

A - 6

$$(1,5) \quad N = N_A \frac{m}{M} = 6,023 \times 10^{23} \times \frac{1}{210} = 28,7 \times 10^{20}$$

$$(0,5) \quad A = 5,8 \times 10^{-8} \times 28,7 \times 10^{20} = 1,6 \times 10^{14} \text{ Bq} : (1)$$

$$(1,5) \quad A = \frac{A_0}{2^3} = \frac{1,6 \times 10^{14}}{8} = 2,0 \times 10^{13} \text{ Bq} : \quad n = \frac{t}{t_{1/2}} = \frac{417}{139} = 3 \quad - 7$$

$$A = \frac{A_0}{2^n} \quad \text{للمزيد :}$$

$$: \quad n \quad t_{1/2} \quad t \quad . \quad A = A_0 e^{-\lambda t} \quad t$$

$$. \quad A = A_0 e^{-\frac{\ln 2}{t_{1/2}} \times n t_{1/2}} = A_0 e^{\ln 2^{-n}} = A_0 \times 2^{-n}$$

$$A = \frac{A_0}{2^n}$$

