Assignment 3

The due date for submitting this assignment has passed. Due on 2018-02-14, 00:00 IST.

Submitted assignment

1) Which of the following statements are correct regarding the low lying excited states of $^{43}_{22}$Ti?

- [ ] both spin 1/2 and spin 3/2 are expected
- [ ] spin 1/2 is expected, while spin 3/2 is not expected
- [ ] spin 3/2 is expected, while spin 1/2 is not expected
- [ ] spin 3/2 is more probable compared to spin 5/2

No, the answer is incorrect.
Score: 0

Accepted Answers:
- spin 3/2 is more probable compared to spin 5/2
- spin 3/2 is expected, while spin 1/2 is not expected

2) A sample of $^{236}_{92}$Ac has $10^{12}$ atoms in it at time $t=0$. How many alpha decays are expected in 2 seconds? (Follow the lecture video of Nuclear Alpha Decay for relevant parameters.)

No, the answer is incorrect.
Score: 0

Accepted Answers:
(Type: Regex Match) 800

3) Certain nucleus $X_1$ undergoes radioactive decay to produce $X_2$, which in turn decays to $X_3$. The decay constants are $\lambda_1$ and $\lambda_2$, respectively. In a short time, so that $\lambda_1 t$ and $\lambda_2 t$ are very small compared to 1, the number of $X_2$ in the sample ($N_2$) are related to the number of $X_1$ at time $t=0$ (denoted by $N_1$).

2 points
4) $^{211}_{84} \text{Po}$ alpha decays to $^{207}_{82} \text{Pb}$. The masses of Po, Pb and alpha are 210.9866274 u, 206.975872 u and 4.0026034 u, respectively. The kinetic energy of the alpha particle can be any value from zero to 3.74 GeV, is about 7.59 MeV, is about 3.74 GeV, can be any value from zero to 7.59 MeV. No, the answer is incorrect. Score: 0 Accepted Answers: $N_2 = \lambda_1 \cdot t \cdot N_0$

5) Q value of the alpha decay of $^{234}_{92} \text{U}$ to $^{230}_{90} \text{Th}$ is found to be 4.8587 MeV. If masses of Uranium-234 and Helium-4 are 234.040947 u and 4.002603 u, respectively, the mass of Thorium-230 in atomic mass units up to three decimal places (without rounding off) is ...... No, the answer is incorrect. Score: 0 Accepted Answers: (Type: Regex Match) 230.033

You were allowed to submit this assignment only once.