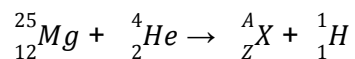


Directions: Choose the letter of the correct answer.

1. ${}_{15}^{31}\text{P}$ and ${}_{16}^{32}\text{S}$ are related as

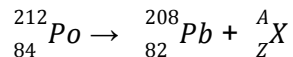
- a. isobars
- b. isotones
- c. isotopes
- d. none of the above

2. Which of the following is the correct identity of ${}^A_Z\text{X}$ in the nuclear reaction below?



- a. ${}_{13}^{28}\text{Al}$
- b. ${}_{13}^{28}\text{Si}$
- c. ${}_{14}^{28}\text{Al}$
- d. ${}_{14}^{28}\text{Si}$

3. The reaction below is an example of:



- a. beta decay

- b. alpha decay
- c. positron decay
- d. electron capture
- e. gamma radiation

4. How many half-lives are necessary to reduce ^{131}I ($t_{1/2} = 8$ days) to a quarter of its original amount?

- a. 2
- b. 8
- c. 16
- d. 32

5. Which of the following terms will give the correct rate constant for the spontaneous decomposition of ^{26}Na ($t_{1/2} = 1.1$ s)?

- a. $\frac{\ln 2}{26 \text{ s}}$
- b. $\frac{\ln 2}{1.1 \text{ s}}$
- c. $\frac{26 \text{ s}}{\ln 2}$
- d. $\frac{1.1 \text{ s}}{\ln 2}$