Smart Edu Hub [.in/.com]

CAIE A LEVEL Chemistry Topic Questions / 9701

1.2.1-Isotopes-set-2-qp

Total Questions: 2

Note:

- For questions with answer choices as statements 1, 2 and 3, follow these instructions for selecting options A/B/C/D:
- A= 1, 2 and 3 are correct
- B=1 and 2 only are correct
- C=2 and 3 only are correct
- D=1 only is correct

Questions

Question 1:

When nuclear reactions take place, the elements produced are different from the elements that reacted. Nuclear equations, such as the one below, are used to represent the changes that occur.

$$^{235}_{92}U + {}^{1}_{0}n \rightarrow {}^{144}_{56}Ba + {}^{89}_{36}Kr + 3{}^{1}_{0}n$$

The nucleon (mass) number total is constant at 236 and the proton number total is constant at 92.

In another nuclear reaction, uranium-238 is reacted with deuterium atoms, $^{2}_{1}H$. An isotope of a new element, **J**, is formed as well as two neutrons.

$$^{238}_{92}U + {}^{2}_{1}H \rightarrow J + 2{}^{1}_{0}n$$

What is isotope **J**?

A ^{238}Np **B** ^{238}Pu **C** ^{240}Np **D** ^{240}Pu

Question 2:

The ^{68}Ge isotope is medically useful because it undergoes a natural radioactive process to give an isotope of a different element, ^{68}X, which can be used to detect tumours. This transformation of ^{68}Ge occurs when an electron enters the nucleus and changes a proton into a neutron.

Which statement about the composition of an atom of ^{68}X is correct?

A It has 4 electrons in its outer p orbitals.

B It has 13 electrons in its outer shell.

C It has 37 neutrons.

D Its proton number is 32.