

Q1.

Answer the question with a cross in the box you think is correct . If you change your mind about an answer, put a line through the box  and then mark your new answer with a cross .

Which of these describes isotopes of an element?

(1)

<input checked="" type="checkbox"/> A	same atomic number	different number of neutrons
<input checked="" type="checkbox"/> B	same atomic number	different number of protons
<input checked="" type="checkbox"/> C	same mass number	different number of neutrons
<input checked="" type="checkbox"/> D	same mass number	different number of protons

(Total for question = 1 mark)

Q2.

Which one of these symbols describes the nucleus of a different isotope of beryllium?

Put a cross (  ) in the box next to your answer.

(1)



(Total for question = 1 marks)

Q3.

Answer the question with a cross in the box you think is correct . If you change your mind about an answer, put a line through the box  and then mark your new answer with a cross .

Figure 11 is the symbol for a nucleus of americium-241.

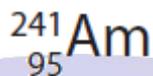


Figure 11

Americium-241 is a radioactive isotope of americium.

Americium-241 decays by emitting alpha ( $\alpha$ ) particles.

(i) Which of these is the symbol for another radioactive isotope of americium?

(1)

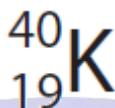
- A**  ${}_{97}^{241}\text{Am}$
- B**  ${}_{96}^{243}\text{Am}$
- C**  ${}_{95}^{245}\text{Am}$
- D**  ${}_{94}^{247}\text{Am}$

(Total for question = 1 marks)

**Q4.**

One isotope of the element potassium is potassium-40.

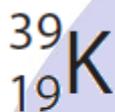
A nucleus of potassium-40 is represented by:



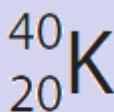
Which of these symbols is correct for the nucleus of a different isotope of potassium?

Put a cross (☒) in the box next to your answer.

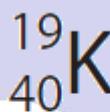
(1)



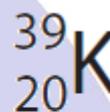
A



B



C



D

(Total for question = 1 marks)

**Q5.**

Fluorine-19 is a stable isotope of the element fluorine.

The element fluorine also has several radioactive isotopes.

Describe **one** similarity and **one** difference between the numbers of particles in one nucleus of fluorine-19 and one nucleus of a radioactive isotope of fluorine.

(2)

similarity .....

.....

difference .....

.....

(Total for question = 2 marks)

Q6.

Figure 1 is a diagram of three atoms.

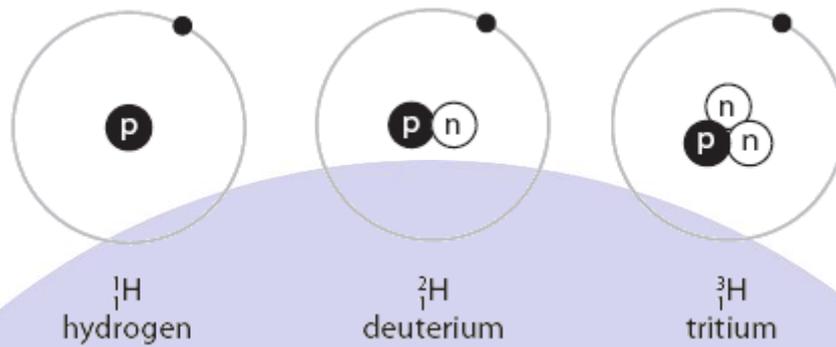


Figure 1

Give reasons why these atoms are isotopes.

(2)

.....

.....

.....

(Total for question = 2 marks)

Q7.

The cobalt-60 sources used to irradiate the food are small metal rods about the size of a pencil. They are made from stable cobalt-59 which is put inside a nuclear reactor. Some of the cobalt-59 is turned into cobalt-60 by the radiation in the reactor.

(i) The nuclei of the two isotopes can be represented as



Compare these two isotopes of cobalt.

(2)

.....

.....

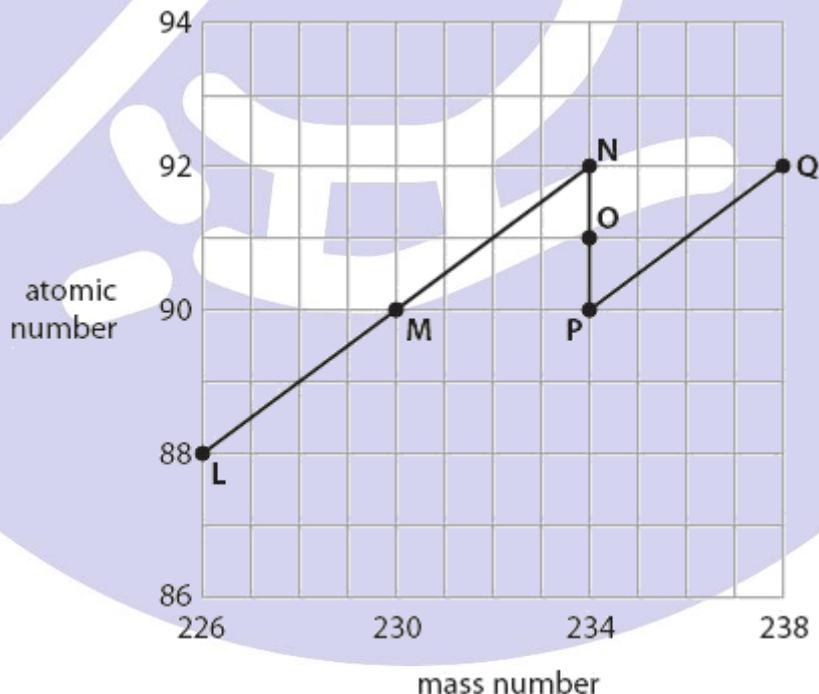
.....

.....

(Total for Question = 2 marks)

Q8.

Uranium-238 is an isotope of uranium. It may undergo either radioactive decay or nuclear fission. A nucleus of uranium-238 is shown as Q in the chart.



State **two** letters from the chart which show isotopes of the same element.

(1)

.....

(Total for question = 1 marks)