

(b) For many years, scientists have tried to produce a controlled nuclear fusion reaction that lasts long enough to be useful. However, the experimental fusion reactors use more energy than they produce.

- (i) From the information given, suggest **one** reason why nuclear fusion reactors are not used to produce energy in a nuclear power station.

(1)

- (ii) Suggest **one** reason why scientists continue to try to develop a practical nuclear fusion reactor.

(1)

(Total 5 marks)

9.

- (a) Uranium atoms do not always have the same number of neutrons. What are atoms of the same element that have different numbers of neutrons called?

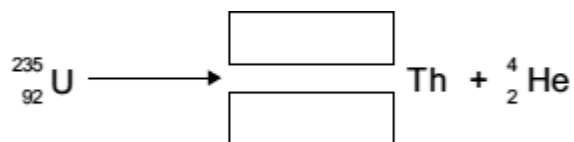
(1)

- (b) By emitting an alpha particle, an atom of uranium-235 decays into an atom of thorium.

An alpha particle, which is the same as a helium nucleus, is represented by the symbol ${}^4_2\text{He}$.

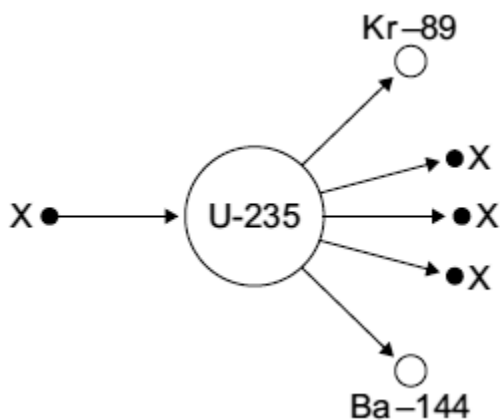
The decay can be represented by the equation below.

Complete the equation by writing the correct number in each of the two boxes.



(2)

(c) The diagram shows an atom of uranium-235 being split into several pieces.



(i) Name the process shown in the diagram.

(1)

(ii) Name the particles labelled **X**.

(1)

(d) Uranium-235 is used as a fuel in some nuclear reactors.
Name another substance used as a fuel in some nuclear reactors.

(1)

(Total 6 marks)