

- 7 (a) Two isotopes of the element uranium are $^{235}_{92}\text{U}$ and $^{238}_{92}\text{U}$.

Explain the term *isotope*.

.....

 [2]

- (b) (i) In a nuclear reaction, proton number and neutron number are conserved. Other than proton number and neutron number, state a quantity that is conserved in a nuclear reaction.

..... [1]

- (ii) When a nucleus of uranium-235 absorbs a neutron, the following reaction may take place.



State the values of a , b , x and y .

$$a = \dots$$

$$b = \dots$$

$$x = \dots$$

$$y = \dots$$

[3]

- (c) When the nucleus of $^{238}_{92}\text{U}$ absorbs a neutron, the nucleus decays, emitting an α -particle. State the proton number and nucleon number of the nucleus that is formed as a result of the emission of the α -particle.

$$\text{proton number} = \dots$$

$$\text{nucleon number} = \dots$$

[2]

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