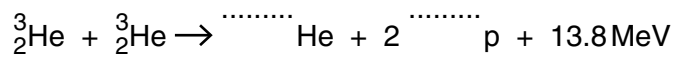


- 7 A nuclear reaction between two helium nuclei produces a second isotope of helium, two protons and 13.8 MeV of energy. The reaction is represented by the following equation.

For
Examiner's
Use



- (a) Complete the nuclear equation. [2]

- (b) By reference to this reaction, explain the meaning of the term *isotope*.

.....
.....
..... [2]

- (c) State the quantities that are conserved in this nuclear reaction.

.....
.....
.....
.....
..... [2]

- (d) Radiation is produced in this nuclear reaction.

State

- (i) a possible type of radiation that may be produced,
..... [1]

- (ii) why the energy of this radiation is less than the 13.8 MeV given in the equation.
..... [1]

- (e) Calculate the minimum number of these reactions needed per second to produce power of 60 W.

number = s⁻¹ [2]

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