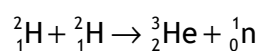


8. The Sun emits energy at an average rate of $4.1 \times 10^{26} \text{ J s}^{-1}$. This energy is produced by nuclear reactions taking place inside the Sun.

The following statement shows one reaction that takes place inside the Sun.



- (a) State the name given to this type of nuclear reaction.

1

- (b) The mass of the particles involved in this reaction are shown in the table.

Particle	Mass (kg)
${}^2_1\text{H}$	3.3436×10^{-27}
${}^3_2\text{He}$	5.0082×10^{-27}
${}^1_0\text{n}$	1.6749×10^{-27}

Determine the energy released in this reaction.

4

Space for working and answer



8. (continued)

- (c) Determine the number of these reactions that would be required per second to produce the Sun's average energy output.

2

Space for working and answer

[Turn over



* X 8 5 7 7 6 0 1 2 3 *