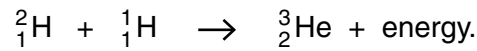


- 8 (a) State what is meant by a *nuclear fusion reaction*.

.....

[2]

- (b) One nuclear reaction that takes place in the core of the Sun is represented by the equation



Data for the nuclei are given in Fig. 8.1.

	mass/u
proton ${}^1_1\text{H}$	1.00728
deuterium ${}^2_1\text{H}$	2.01410
helium ${}^3_2\text{He}$	3.01605

Fig. 8.1

- (i) Calculate the energy, in joules, released in this reaction.

energy = J [3]

- (ii) The temperature in the core of the Sun is approximately 1.6×10^7 K.
 Suggest why such a high temperature is necessary for this reaction to take place.

.....

[2]