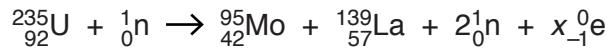


- 12 One possible nuclear reaction that takes place in a nuclear reactor is given by the equation



Data for the nuclei and particles are given in Fig. 12.1.

nucleus or particle	mass/u
$^{235}_{92}\text{U}$	235.123
$^{95}_{42}\text{Mo}$	94.945
$^{139}_{57}\text{La}$	138.955
${}^1_0\text{n}$	1.00863
${}^0_{-1}\text{e}$	5.49×10^{-4}

Fig. 12.1

- (a) Determine, for this nuclear reaction, the value of x .

$$x = \dots \quad [1]$$

- (b) (i) Show that the energy equivalent to 1.00 u is 934 MeV.

[3]

- (ii) Calculate the energy, in MeV, released in this reaction. Give your answer to three significant figures.

energy = MeV [3]

- (c) Suggest the forms of energy into which the energy calculated in (b)(ii) is transformed.

.....
.....
.....
.....

[2]

[Total: 9]

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