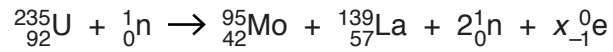


12 One possible nuclear reaction that takes place in a nuclear reactor is given by the equation



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

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

Fig. 12.1

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

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

- (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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