864.

Problem 55.13 (RHK)

We have to calculate the energy released in the fission reaction

$$^{235}\mathrm{U} + \mathrm{n} \rightarrow {}^{141}\mathrm{Cs} + {}^{92}\mathrm{Rb} + 3\mathrm{n}.$$

Needed atomic masses are

^{235}U	235.043924 u	^{92}Rb	91.919661 u
^{141}Cs	140.920006 u	n	1.008665 u.

Solution:

The energy released in the fission reaction

$^{235}\mathrm{U} + \mathrm{n} \rightarrow {}^{141}\mathrm{Cs} + {}^{92}\mathrm{Rb} + 3\mathrm{n}$

will be

$$\begin{aligned} Q &= \left(m_{^{235}\mathrm{U}} - m_{^{141}\mathrm{Cs}} - m_{^{92}\mathrm{Rb}} - 2m_{\mathrm{n}}\right)c^2 \\ &= \left(235.043924 - 140.920006 - 91.919661 - 2\times 1.008665\right)\mathrm{u}c^2 \\ &= 0.186927\ \mathrm{u}c^2 \\ &= 0.186927 \times 931.5\ \mathrm{MeV} = 174.1\ \mathrm{MeV}. \end{aligned}$$