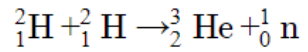


Calculate the energy released in MeV in the following nuclear reaction :



Assume that the masses of ${}^2_1\text{H}$, ${}^3_2\text{He}$ and neutron (n) respectively are 2.020, 3.0160 and 1.0087 in amu.

A 14.25 MeV

B 1.425 MeV

C 142.5 MeV

D 1425 MeV

Correct option is A)

The mass defect is the difference between the mass of reactants and the mass of products.

$$\Delta m = 2 \times m_{{}^2_1\text{H}} - m_{{}^3_2\text{He}} - m_{\text{n}} = (2 \times 2.020) - (3.0160 + 1.0087)$$

$$= 4.040 - 4.0247 = 0.0153$$

The energy released during the nuclear reaction is

$$\Delta E = \Delta m \times 931.48 \text{ MeV} = 14.25 \text{ MeV}$$