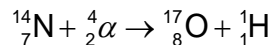


- 29** A stationary nitrogen nucleus reacts with a high speed α -particle to produce a proton and a nucleus of an oxygen isotope as shown in the equation:



The masses of the nuclides involved are as follows

nuclide	mass / u
${}^4_2\alpha$	4.002604
${}^1_1\text{H}$	1.007825
${}^{14}_7\text{N}$	14.003074
${}^{17}_8\text{O}$	16.999130

Which is the minimum energy that the α -particle possess in order for the reaction to occur?

- A** $1.9 \times 10^{-13} \text{ eV}$
- B** $4.0 \times 10^{-13} \text{ eV}$
- C** 1.2 eV
- D** $1.2 \times 10^6 \text{ eV}$