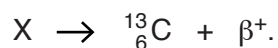


- 7 A stationary nucleus X decays by emitting a β^+ particle to form a nucleus of carbon-13 ($^{13}_6\text{C}$). An incomplete equation to represent this decay is



- (a) State the name of the class (group) of particles that includes β^+ .

.....[1]

- (b) nucleus X, state the number of

protons,

neutrons.[1]

- (c) The carbon-13 nucleus has a mass of $2.2 \times 10^{-26}\text{kg}$. Its kinetic energy as a result of the decay process is 0.80MeV .

Calculate the speed of this nucleus.

speed = ms^{-1} [3]

- (d) Explain why the sum of the kinetic energies of the carbon-13 nucleus and the β^+ particle cannot be equal to the total energy released by the decay process.

.....

.....[1]

[Total: 6]