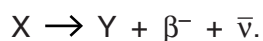


7 A stationary nucleus X decays to form nucleus Y, as shown by the equation



(a) In the above equation, draw a circle around all symbols that represent a lepton. [1]

(b) State the name of the particle represented by the symbol  $\bar{\nu}$ .

.....[1]

(c) Energy is released during the decay process. State the form of the energy that is gained by nucleus Y.

.....[1]

(d) By comparing the compositions of X and Y, state and explain whether they are isotopes.

.....  
.....  
.....[2]

(e) The quark composition of one nucleon in X is changed during the emission of a  $\beta^-$  particle. Describe this change to the quark composition.

.....  
.....[1]

[Total: 6]