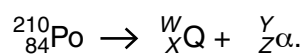


- 7 A polonium nucleus  ${}^{210}_{84}\text{Po}$  is radioactive and decays with the emission of an  $\alpha$ -particle. The nuclear reaction for this decay is given by



- (a) (i) State the values of  $W$  .....

$X$  .....

$Y$  .....

$Z$  .....

[2]

- (ii) Explain why mass seems not to be conserved in the reaction.

.....

.....[2]

- (b) The reaction is spontaneous. Explain the meaning of *spontaneous*.

.....

.....[1]