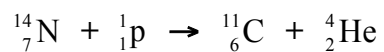**Marks**
2

- ^{11}C is used in positron emission tomography – PET. It is synthesised by bombarding a ^{14}N target with protons. Write a nuclear equation for the formation of ^{11}C and thus identify the by-product of this synthesis.

$$^{14}_{7}N \ + \ ^{1}_{1}p \ \rightarrow \ ^{11}_{6}C \ + \ ^{4}_{2}He$$

^{11}C undergoes positron decay with a half life of 20.3 minutes. Write a nuclear equation to identify the product of this decay reaction.

$$^{11}_{6}C \ \rightarrow \ ^{0}_{1}\beta^{+} \ + \ ^{11}_{5}B$$