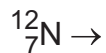


- 7 (a) Nitrogen-12 ($^{12}_7\text{N}$) is an unstable isotope of nitrogen that decays by the emission of radiation to carbon-12 ($^{12}_6\text{C}$).

Complete the full nuclear equation for the decay, including all the particles involved.



[3]

- (b) Hydrogen-1 (^1_1H) is an isotope of hydrogen. An atom of hydrogen-1 comprises a proton with an orbiting electron.

An antiparticle equivalent of hydrogen-1 comprises an antiproton with an orbiting positron. The antiquarks in the antiproton are the antiparticles of the quarks in a proton.

- (i) State the charge on the positron in terms of the elementary charge e .

charge = e [1]

- (ii) State the group (class) of fundamental particle to which the positron belongs.

..... [1]

- (iii) In Table 7.1, state the flavour and charge of the three antiquarks that comprise the antiproton.

Table 7.1

flavour	charge / e

[3]

[Total: 8]