7 **(a)** Nuclei X and Y are different isotopes of the same element.

Nucleus X is unstable and emits a β^+ particle to form nucleus Z.

By comparing the number of protons in each nucleus, state and explain whether the charge of nucleus X is less than, the same as or greater than the charge of:

(i) nucleus Y

.....

..... [1]

(ii) nucleus Z.

.....

.....

..... [2]

(b) Hadrons can be divided into two groups (classes), P and Q. Group P is baryons.

(i) State the name of group Q.

..... [1]

(ii) Describe, in general terms, the quark structure of hadrons that belong to group Q.

.....

..... [1]

[Total: 5]