

- 7 (a) The results of the α -particle scattering experiment provide evidence for the structure of the atom.

Result 1: The vast majority of the α -particles pass straight through the metal foil or are deviated by small angles.

Result 2: A very small minority of α -particles is scattered through angles greater than 90° .

State what may be inferred (deduced) from:

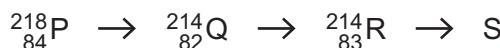
- (i) result 1

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..... [1]

- (ii) result 2.

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

- (b) A radioactive decay sequence contains four nuclei, P, Q, R and S, as shown.



Nucleus S is an isotope of nucleus P.

- (i) Determine the proton number and the nucleon number of nucleus S.

$$\text{proton number} = \dots$$

$$\text{nucleon number} = \dots$$

[2]

- (ii) The quark composition of a nucleon in Q changes as Q decays to form R.

Describe this change to the quark composition of the nucleon.

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..... [1]