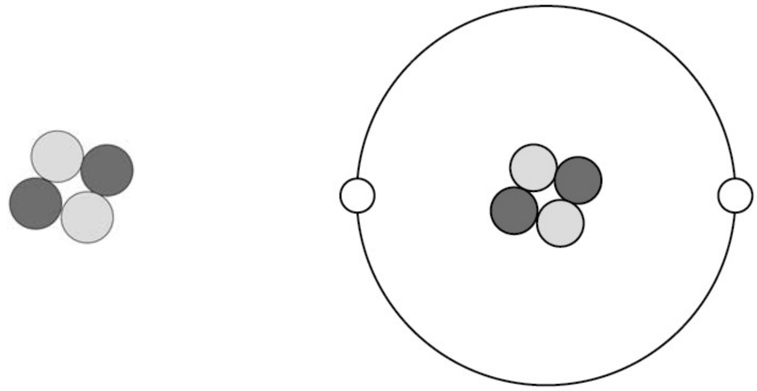
0 3 **Figure 4** is a diagram of an alpha particle and a helium atom.

Figure 4



Alpha particle Helium atom

0 3 . 1 What is the approximate size of a helium atom?

Tick **one** box.

[1 mark]

1×10^{-5} m ☐

1×10^{-10} m ☐

1×10^{-15} m ☐

1×10^{-20} m ☐

0 3 . 2 A helium atom is much larger than an alpha particle.

Give **one** other difference between a helium atom and an alpha particle.

[1 mark]

0 3 . 3 What is the atomic number of the helium atom in **Figure 4**?

Tick **one** box.

[1 mark]

2 ☐

4 ☐

6 ☐

8 ☐

0 3 . 4 What is the charge on the helium atom in **Figure 4**?

Explain your answer.

[3 marks]

0 3 . 5 Helium is a gas that occurs naturally.

There is very little helium on Earth.

Helium has important uses in medicine and is also used to inflate party balloons.

Some scientists believe that helium should **not** be used to inflate party balloons.

Why?

[2 marks]

Question 3

Question	Answers	Extra information	Mark	AO / Spec. Ref.
03.1	1 x 10^{-10} m		1	AO1/1 6.4.1.1
03.2	(a helium atom) has 2 electrons	accept it has more mass allow it is not charged	1	AO2/1 6.4.1.1
03.3	2		1	AO2/1 6.4.1.2
03.4	neutral (because) protons have positive charge and electrons have negative charge (and) there are equal numbers of protons and electrons	accept 0 or 'no charge'	1 1 1	AO2/1 6.4.1.2
03.5	helium will one day run out there will be none left for medical uses so balloons waste helium		1 1	AO3/1b 6.4.1.2
Total			**8**	