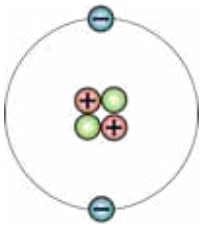
0 1 The below diagram shows the arrangement of subatomic particles within a helium atom.



0 1 . 1 Complete the following table which displays information on each of these subatomic particles.

Particle	Mass (relative)	Charge (relative)
	1	+ 1
Neutron		
Electron	$\frac{1}{1800}$	

[4 marks]

0 1 . 2 The nucleus of this helium atom can be represented in the form:

$$^{A}_{Z}He$$

Determine the values of the constants A and Z.

A = _____

Z = _____

[2 marks]

0 1 . 3 Under certain conditions, helium atoms can become ionised.
Explain what is meant by an ion.

_____

_____

[2 marks]

0 1 . 4 When heated to a high temperature, a particular helium atom develops a charge of +1. What must have happened to the atom to allow it to develop this charge?

_____

[1 mark]

0 2

A scientist makes the following statement:

Of all the isotopes of carbon, carbon-12 is the most stable.

0 2 . 1

Explain the meaning of the term isotope.

_____

_____

[2 marks]

0 2 . 2

Uranium-235 is used in the generation of electricity in nuclear power stations. A uranium-235 nucleus may be represented using the following notation:

$$^{235}_{92}\mathrm{U}$$

Determine the number of protons and neutrons in a uranium-235 nucleus.

Number of protons = _____

Number of neutrons = _____

[2 marks]

0 2 . 3

State the (approximate) radius of an atom.

Radius = _____ m

[1 mark]

0 2 . 4

Uranium-238 is also present within the reactors of nuclear power stations. What is the difference between uranium-235 and uranium-238?

_____

_____

[1 mark]