Oxford Cambridge and RSA

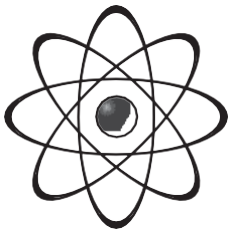
GCSE Chemistry B (Twenty First Century Science)

J258/01 Breadth in Chemistry (Foundation Tier)

Question Set 20

1 Dalton was one of the first scientists to model the atom.

Rutherford later developed an improved model of the atom from experiments.



Rutherford's model describes:
- a small positive nucleus
- the nucleus surrounded by empty space
- negatively charged particles orbiting in this empty space.

(a) Describe how Dalton's model of the atom was different to Rutherford's.

[1]

(b) Name the 'negatively charged particles' in Rutherford's model.

[1]

(c) We currently know that the nucleus of an atom contains protons and neutrons.

Complete the table by filling in the blank spaces.

	Relative Charge	**Relative Mass**
Proton	+1	1
Neutron		

[2]

(d) The table shows the number of protons and neutrons in a sodium atom.

Complete the table by filling in the blank spaces.

	Atomic number	**Protons**	**Mass number**	**Neutrons**
Sodium	11	11	23	12
Fluorine	9		19	

[2]

(e) Kai finds some information on the internet.

	Approximate size (m)
Hydrogen atom	5.3×10^{-11}
Hydrogen molecule	2.9×10^{-10}
Oxygen molecule	3.5×10^{-10}
Proton	8.7×10^{-16}
Xenon atom	1.1×10^{-10}

Table 1.1

Kai writes some notes:
1 Atoms are smaller than molecules.
2 Atoms are smaller than protons.

Is Kai correct?

Use the information in **Table 1.1** to explain your answer.

[2]

Total Marks for Question Set 20: 8

Resource Materials

Question Set No: 20

The Periodic Table of the Elements