Do not write outside the box

0 2 This question is about the halogens.

0 2 . 1 Which group in the periodic table is known as the halogens?

[1 mark]

Tick **one** box.

Group 1 ☐

Group 2 ☐

Group 7 ☐

Group 0 ☐

0 2 . 2 A fluorine atom has 7 electrons in the outer shell.

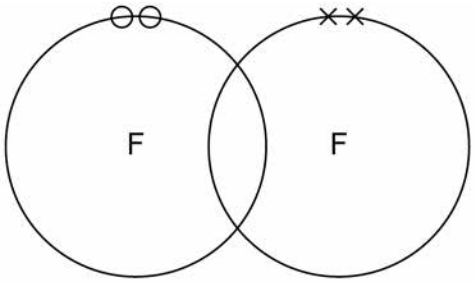
Figure 8 shows part of a dot and cross diagram to represent a molecule of fluorine (F_2).

Complete the dot and cross diagram.

You should show only the electrons in the outer shells.

[2 marks]

Figure 8



0 2 . 3 Chlorine reacts with potassium bromide solution.

Complete the word equation.

[2 marks]

chlorine + potassium bromide → _____ + _____

_____

Do not write outside the box

0 2 . 4 What type of reaction happens when chlorine reacts with potassium bromide solution?

[1 mark]

Tick **one** box.

decomposition ☐

displacement ☐

neutralisation ☐

precipitation ☐

0 2 . 5 Complete the sentence.

Choose the answer from the box.

[1 mark]

an atom	**an electron**	**a neutron**	**a proton**

Chlorine is more reactive than bromine.

This is because chlorine gains _____ more easily.

0 2 . 6 How does the size of a chlorine atom compare with the size of a bromine atom?

Complete the sentence.

Choose the answer from the box.

[1 mark]

bigger than	**the same size as**	**smaller than**

A chlorine atom is _____ a bromine atom.

Do not write outside the box

0 2 . 7 Give a reason for your answer to question **02.6**

[1 mark]

Reason _____

_____

0 2 . 8 Fluorine reacts with chlorine to produce ClF_3

Balance the chemical equation for the reaction.

[1 mark]

$Cl_2 +$ _____ $F_2 \rightarrow 2\ ClF_3$

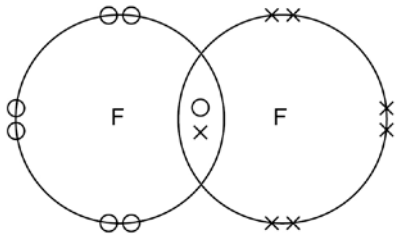
0 2 . 9 Explain why fluorine is a gas at room temperature.

Use the following words in your answer:

energy **forces** **molecules** **weak**

[3 marks]

13

Question	Answers	Extra information	Mark	AO / Spec. Ref.
02.1	group 7		1	AO1 5.1.2.6
02.2		one shared pair anywhere in overlap between two circles **or** on intersection 6 other electrons on each atom allow dots **or** crosses **or** mixture for all marks ignore any inner shell electrons	1 1	AO2 5.1.2.6 5.2.1.4
02.3	bromine potassium chloride	allow correct chemical formulae either order	1 1	AO2 5.1.1.1 5.1.2.6
02.4	displacement		1	AO1 5.1.2.6
02.5	(an) electron		1	AO2 5.1.2.6
02.6	smaller than		1	AO2 5.1.2.1 5.1.2.6

02.7	(chlorine has) fewer levels / shells (of electrons)	mark independent of answer to question **02.6** allow converse for bromine allow (chlorine has) fewer electrons allow Cl has 3 levels / shells <u>and</u> Br has 4 levels / shells ignore atomic number **or** mass number **or** number of protons	1	AO2 5.1.2.1 5.1.2.6
02.8	3	allow multiples	1	AO2 5.1.1.1 5.1.2.6
02.9	there are <u>weak forces</u>	do **not** accept weak bonds	1	AO1 5.1.2.6 5.2.2.4
	between <u>molecules</u>	allow weak intermolecular forces for the first **2** marks	1	AO1 5.1.2.6 5.2.2.4
	which require little <u>energy</u> to overcome / break	allow does not need much <u>energy</u> to boil	1	AO2 5.1.2.6 5.2.2.4
Total			**13**	