

Figure 2 shows the positions of sodium and chlorine in the periodic table.

Figure 2

[illegible]

1.1

State **one** difference and **one** similarity in the electronic structure of sodium and of chlorine.

[2 marks]

Difference

Similarity

1.2

Sodium atoms react with chlorine atoms to produce sodium chloride (NaCl).

Describe what happens when a sodium atom reacts with a chlorine atom.

Write about electron transfer in your answer.

[4 marks]

2.1

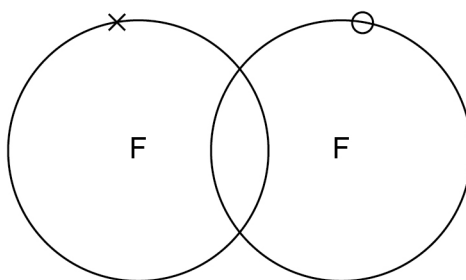
Figure 4 represents one molecule of fluorine.

Complete the dot and cross diagram on **Figure 4**

You should show only the electrons in the outer shells.

[2 marks]

Figure 4



This question is about ammonia, NH_3

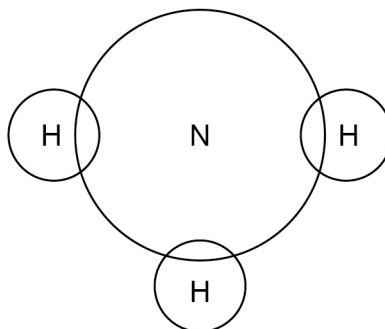
3.1

Complete the dot and cross diagram for the ammonia molecule shown in **Figure 6**.

Show only the electrons in the outer shell of each atom.

[2 marks]

Figure 6



3.2

Give **one** limitation of using a dot and cross diagram to represent an ammonia molecule.

[1 mark]

4.1

Chlorine reacts with sodium and with hydrogen.

Compare the structure and bonding in sodium chloride and hydrogen chloride.

[6 marks]

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This question is about elements.

Caesium is in Group 1 of the periodic table.

5.1

Explain what happens to caesium atoms and to oxygen atoms when caesium reacts with oxygen to produce caesium oxide.

You should answer in terms of electrons.

[4 marks]

Sodium reacts with oxygen to produce the ionic compound sodium oxide.

Oxygen is a Group 6 element.

6.1

Draw a dot and cross diagram to show what happens when atoms of sodium and oxygen react to produce sodium oxide.

[4 marks]

Diagram

7.1

Name the type of bonding in compounds formed between metals and non-metals.

[1 mark]

This question is about hydrogen chloride and hydrochloric acid.

8.1

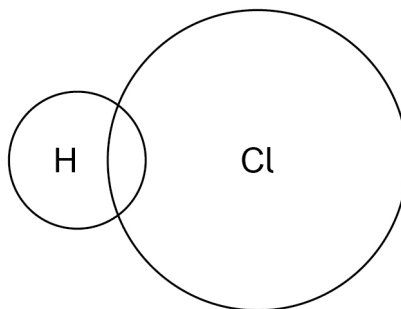
Complete the dot and cross diagram to represent the bonding in hydrogen chloride on **Figure 7**.

Use dots (o) and crosses (x) to represent electrons.

You should show only the electrons in the outer shells.

[2 marks]

Figure 7



9.1

Draw a dot and cross diagram for a molecule of hydrogen chloride (HCl).

Show the outer shell electrons only.

[2 marks]

Sodium is in Group 1 of the periodic table.

Sodium reacts with oxygen to produce sodium oxide.

10.1

Explain what happens to sodium atoms and to oxygen atoms when sodium reacts with oxygen to produce sodium oxide (Na_2O).

Answer in terms of electrons.

[4 marks]

11.1

Figure 4 shows the outer shells in one molecule of chlorine (Cl_2).

Complete the dot and cross diagram to show the electrons in the outer shells.

[2 marks]

Figure 4

