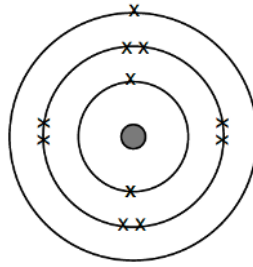


0 1

Sodium chloride, also known as common salt, can be made by reacting sodium and chlorine gas. The diagram below represents a sodium atom.

**TOP TIP:**

You can get two marks for saying 'loses one electron'.

You must say that the charge is 1+, not just the charge is positive.

Talking about gaining a full outer shell or noble gas electron configuration is not relevant here.

0 1

1

Use the diagram to help you explain how a sodium atom turns into a sodium ion.

Give the exact charge on the sodium ion.

[3 marks]

The sodium atom loses electrons

[1]

From the outer/outermost shell

[1]

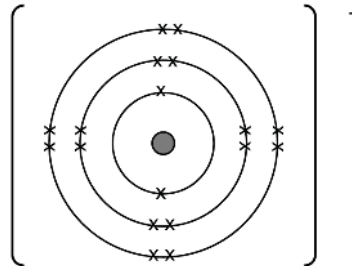
or "loses one electron"

[2]

Charge of 1+

[1]

The diagram below represents a chloride ion.



The chloride ion is negative, (Cl⁻).

0 1

2

Explain why the chloride ion has a negative charge. Use the diagram to help you.

[2 marks]

(The chloride ion or it) has one extra electron

or one more electron than protons

or it has 17 protons and 18 electrons.

[2]

It has more electrons than protons

[1]

NOTE: The underlined parts are important for the second mark.

0 1

3

Chloride ions are strongly attracted to sodium ions in sodium chloride.

Explain why.

[1 mark]

Because oppositely charged ions attract each other

or

Because chloride ions are negative and sodium ions are positive

[1]

0 2 . 1

Chlorine is an element which is in group 7 of the periodic table (the halogens).

There are more elements in group 7.

Name another element in group 7 of the Periodic Table.

You may use the periodic table to help you.

[1 mark]

One from: fluorine, bromine, iodine, astatine [1]

0 2 . 2

All group 7 elements can produce ions.

What is the charge on the ions produced by group 7 elements?

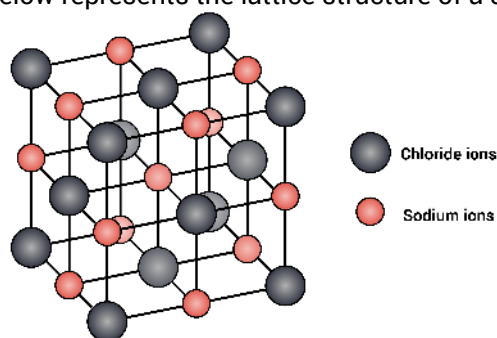
[1 mark]

1- [1]

TOP TIP :

Better to be safe and say 1-, not just 'negative'.

The diagram below represents the lattice structure of a sodium chloride crystal.



0 2 . 3

Explain why the ions in this lattice stay in place.

[3 marks]

WARNING:

Make sure you don't write 'chlorine ions', because they are called chloride ions.

Sodium ions have a (single) positive charge and chloride ions have a (single) negative charge [1]

Ions with opposite charge are attracted (to each other) or positive sodium ions attract negative chloride ions [1]

(Positive and negative) ions are arranged alternatively (in each direction) [1]

(Total 11 marks)

End