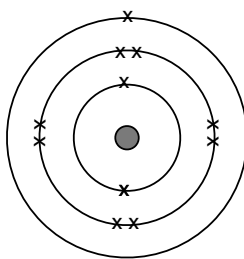


- 1 Sodium chloride, also known as common salt, can be made by reacting sodium and chlorine gas. The diagram below represents a sodium atom.



- 1 (a) Use the diagram to help you explain how a sodium atom turns into a sodium ion.  
Give the exact charge on the sodium ion.

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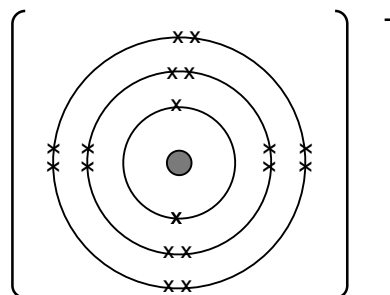
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(3 marks)

- 1 (a) (i) The diagram below represents a chloride ion.



The chloride ion is negative, ( $\text{Cl}^-$ ).

- 1 (a) (ii) Explain why the chloride ion has a negative charge. Use the diagram to help you.

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(2 marks)

1 (a) (iii) Chloride ions are strongly attracted to sodium ions in sodium chloride.

Explain why.

.....  
.....

(1 mark)

**(Total 6 marks)**

2 Chlorine is an element which placed in group 7 of the periodic table (the halogens). There are more elements in group 7.

2 (a) (i) Name another element in group 7 of the Periodic Table. You may use the data sheet to help you.

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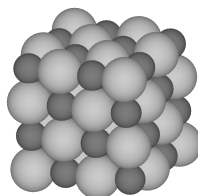
(1 mark)

2 (a) (ii) All group 7 elements can produce ions. What is the charge on the ions produced by group 7 elements?

.....

(1 mark)

2 (a) (iii) The diagram below represents the lattice structure of a sodium chloride crystal.



2 (a) (iv) Explain why the ions in this lattice stay in place.

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(3 marks)

**(Total 5 marks)**

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