

### Paper 3

Questions are applicable for both core and extended candidates

1 Samarium is a metal.

(e) Samarium reacts with oxygen to produce samarium oxide,  $\text{Sm}_2\text{O}_3$ .

Complete the symbol equation for this reaction.



2 (e) Complete the symbol equation for the reaction of sodium with water.



3 This question is about nitrogen and compounds of nitrogen.

(a) Nitrogen is a non-metal. Nitrogen is a poor electrical conductor.

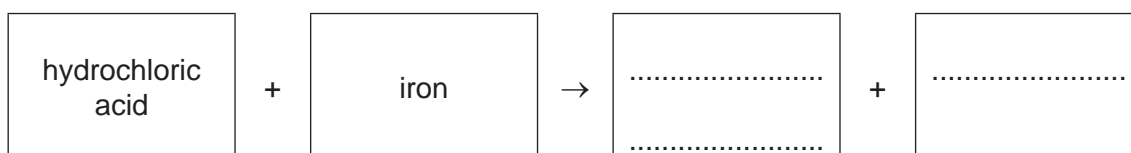
Describe two **other** physical properties which are typical of non-metals.

1 .....

2 ..... [2]

4 (c) Hydrochloric acid reacts with iron.

Complete the word equation for this reaction.



[2]

**5** This question is about zinc and compounds of zinc.

**(a)** Zinc is a metal.

Give **three** physical properties of metals.

1 .....

2 .....

3 .....

[3]

**6** This question is about metals.

**(a)** State **three** general physical properties common to most metals.

1 .....

2 .....

3 .....

[3]

**Paper 4**

**Questions are applicable for both core and extended candidates  
unless indicated in the question**

**7** Lithium, sodium and potassium are Group I elements.

**(a)** Name the type of bonding in these elements.

..... [1]

**(b)** Sodium reacts with cold water to form hydrogen gas and a solution of a strong alkali.

**(i)** State the test for hydrogen gas.

test .....

positive result ..... [1]

**(ii)** Suggest the pH of a solution of a strong alkali.

pH = ..... [1]

**(iii)** Name a substance which can be used to confirm the pH of a solution of a strong alkali.

..... [1]

**(iv)** Write the symbol equation for the reaction between sodium and cold water.

Include state symbols.

..... [3]

**8** Copper is element 29 in the Periodic Table.

**(b)** Copper can be stretched into wires. Copper wires conduct electricity.

**(i)** Name the property of metals which means that they can be stretched into wires.

..... [1]

**(ii)** Name the particles responsible for the conduction of electricity in solid copper.

..... [1]