



General Certificate of Secondary Education
2012

Centre Number

71

Candidate Number

Science: Double Award (Modular)

Paper 2
Foundation Tier

[G8202]



TUESDAY 12 JUNE, MORNING

TIME

1 hour.

INSTRUCTIONS TO CANDIDATES

Write your Centre Number and Candidate Number in the spaces provided at the top of this page.

Write your answers in the spaces provided in this question paper.
Answer **all four** questions.

INFORMATION FOR CANDIDATES

The total mark for this paper is 80.

Quality of written communication will be assessed in Question **3(b)**.
Figures in brackets printed down the right-hand side of pages indicate the marks awarded to each question or part question.

A Data Leaflet which includes a Periodic Table of the Elements is provided.

For Examiner's
use only

| Question Number | Marks |
|-----------------|-------|
| 1 | |
| 2 | |
| 3 | |
| 4 | |

Total
Marks

| |
|--|
| |
|--|

1 (a) Some chemicals have symbols on their containers.

(i) What name is given to these symbols? Circle the correct answer.

health **danger** **hazard** [1]

(ii) Give **two** reasons why symbols are used on containers of harmful chemicals, instead of words.

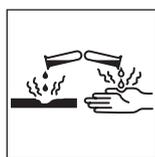
1. _____

2. _____ [2]

Four of the symbols used on containers are shown below.



A



B



C



D

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(iii) Sodium cyanide is a **poisonous** chemical. Which symbol **A**, **B**, **C** or **D** should be placed on a bottle of sodium cyanide?

_____ [1]

(iv) Which symbol **A**, **B**, **C** or **D** should be placed on a can of petrol?

_____ [1]

(v) Complete the following sentence about sulphuric acid.

A bottle of sulphuric acid with symbol **B** contains a substance

which is _____ . [1]

Examiner Only

Marks Remark

(b) This question is about changes of state. Choose from the words and phrases below to complete each sentence.

condenses freezes decreases sublimation
 increases boils gives out taken in
 melts given out compressible

- (i) When water is heated it _____ to form steam and energy is _____. [2]
- (ii) When solid iodine is heated it changes directly into a gas and this is called _____. [1]
- (iii) Gases can be used in aerosol sprays as they are _____. [1]
- (iv) The volume of a gas _____ when the temperature is raised. [1]

| Examiner Only | |
|---------------|--------|
| Marks | Remark |
| | |

(c) The properties of some metals are given below.

| Metal | Melting temperature/ $^{\circ}\text{C}$ | Electrical conductivity | Relative cost | Density g/cm^3 | Relative strength |
|-----------|---|-------------------------|---------------|-------------------------|-------------------|
| aluminium | 660 | very good | medium | 2.7 | 1 |
| copper | 1083 | excellent | medium | 8.9 | 2 |
| iron | 1535 | good | low | 7.8 | 3 |
| silver | 962 | excellent | high | 10.5 | 1 |
| zinc | 420 | good | medium | 7.1 | 1.5 |

Use the information in the table to answer the following questions.

(i) Why is copper used for electrical wiring?

_____ [1]

(ii) Why is iron used to make nails rather than zinc?

_____ [1]

(iii) All metals are conductors of electricity.



Sensornet Ltd

Explain why electrical overhead cables are made of aluminium.

 _____ [2]

Examiner Only

Marks Remark

- (d) For each part of this question three answers are given. Only one is correct. Circle the correct answer. One has been done for you. You may find your Data Leaflet useful.

The element with the symbol C is:

copper

carbon

chlorine

- (i) The correct symbol for sodium is:

S

Na

So

[1]

- (ii) The substance with the formula NO is:

nobelium

nickel

nitrogen monoxide

[1]

- (iii) The name of the compound with the formula NaHCO_3 is:

**sodium
carbonate**

**sodium
hydrogencarbonate**

**sodium
hydrogenate**

[1]

- (iv) The formula of copper(II) chloride is:

Cu_2Cl

Cu_2Cl

CuCl_2

[1]

- (v) Steam can be written as:

$\text{H}_2\text{O(l)}$

$\text{H}_2\text{O(g)}$

$\text{H}_2\text{O(s)}$

[1]

| Examiner Only | |
|---------------|--------|
| Marks | Remark |
| | |

(b) When hydrated copper(II) sulphate crystals are heated strongly they break down into anhydrous copper(II) sulphate and another compound.

(i) Name the other compound formed in this reaction.

_____ [1]

(ii) Give the colour change which takes place in this reaction.

from _____ to _____ [2]

(c) The reaction between magnesium ribbon and dilute hydrochloric acid can be speeded up or slowed down.

(i) Complete the table below to show whether the reaction speeds up or slows down when a reaction condition is changed. One has been done for you.

| Change of condition | speeds up OR slows down |
|--|-------------------------------|
| shaking | speeds up |
| lower temperature | |
| higher hydrochloric acid concentration | |
| using powdered magnesium | |
| addition of a catalyst | |

[4]

(ii) Name a piece of apparatus which would be suitable to **measure** the volume of hydrogen given off when magnesium reacts with hydrochloric acid.

_____ [1]

(iii) How could you tell if the reaction between magnesium and dilute hydrochloric acid had finished?

_____ [1]

Examiner Only

Marks Remark

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(Questions continue overleaf)

4 (a) Mendeleev was responsible for much of the early development of the Periodic Table.

(i) Give **three** features of the Periodic Table developed by Mendeleev.

1. _____

2. _____

3. _____

_____ [3]

(ii) Describe **three** ways in which the modern Periodic Table, as shown in your Data Leaflet, is different from the one Mendeleev developed.

1. _____

2. _____

3. _____

_____ [3]

(b) Complete the table below, which gives some information about elements, their Groups, Periods and electronic structures. You may find your Data Leaflet useful.

| Element | Group | Period | Electronic structure |
|-----------|-------|--------|----------------------|
| potassium | | 4 | |
| magnesium | II | | |
| | | 3 | 2, 8, 6 |

[6]

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Marks

Remark

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