



Rewarding Learning

General Certificate of Secondary Education
2013–2014

Science: Single Award

Unit 2 (Chemistry)

Foundation Tier

[GSS21]

ML

THURSDAY 15 MAY 2014, MORNING

TIME

1 hour, plus your additional time allowance.

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 eleven** questions.

INFORMATION FOR CANDIDATES

The total mark for this paper is 60.

Quality of written communication will be assessed in Question **10(a)**.

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 included in this question paper.

Centre Number

71

Candidate Number

For Examiner's use only	
Question Number	Marks
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	

Total
Marks

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1 Some hazard symbols and their names are shown below.

- (a) Match each symbol to its name. Use lines to do this.
One has been done for you.

Symbol	Name
	<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;">corrosive</div>
	<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;">explosive</div>
	<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;">flammable</div>
	<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;">radioactive</div>

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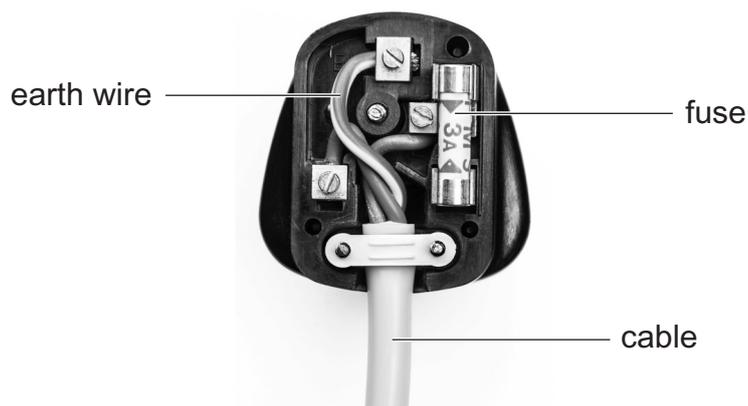
[2]

- (b) What is the danger of a toxic substance?

[1]

Examiner Only	
Marks	Remark

2 Below is a picture of a plug from a lamp.



© Martyn F. Chillmaid / Science Photo Library

(a) Finish the sentences below about the materials used in a plug.

Choose from:

conductor

insulator

plastic

glass

The wires in a plug are made from copper because it is
a good _____ of electricity.

The cable to the plug is covered by the
material _____.

[2]

Examiner Only	
Marks	Remark

A fuse is used to make the lamp safe. The metal wire in the fuse must melt if there is too much electricity.

Below is some information about metals which may be used in the fuse.

Metal	Melting point/°C	Cost per gram/£
Platinum	1768	26.28
Tungsten	3422	3.41
Lead	327	0.98
Copper alloy	398	3.34

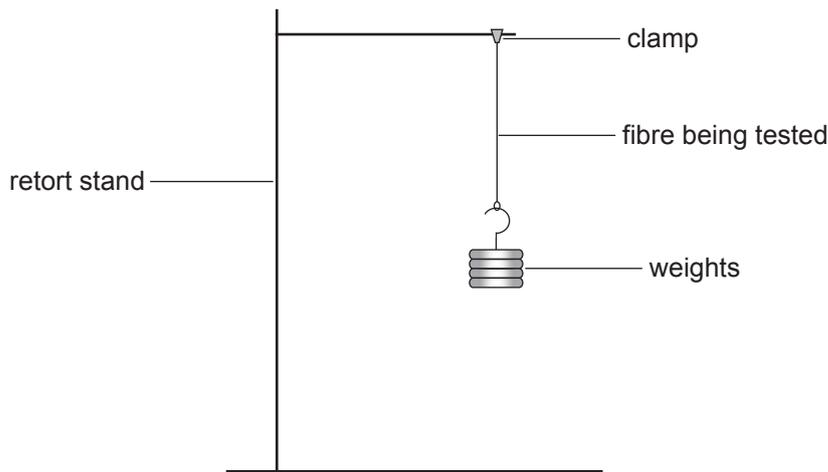
- (b) The wire must melt if the temperature reaches 330 °C.
Which metal should the fuse wire be made from? Explain your answer.

[2]

Examiner Only

Marks Remark

- 3 A pupil carried out an investigation to test the strength of five different fibres. The apparatus he used is shown below.



- (a) The maximum weight each fibre could hold before breaking was measured and recorded below.

Fibre	Maximum weight/N
Nylon	20
Linen	11
Silk	8
Lycra	25
Cotton	10

- (i) Write down the name of the fibre that is strongest.

_____ [1]

- (ii) Write down the name of the **two** synthetic (not natural) fibres that were tested.

_____ and _____ [1]

- (b) Write down **two** reasons why synthetic fibres are replacing natural fibres for clothing.
Use what you know and the information from the table to help you answer this question.

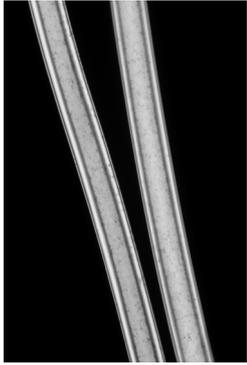
1. _____

2. _____ [2]

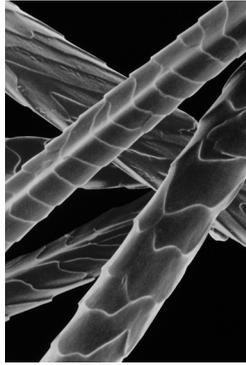
Examiner Only

Marks Remark

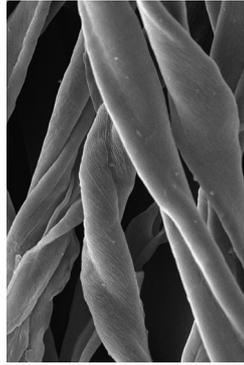
4 Below are pictures of different fibres as seen under a microscope.



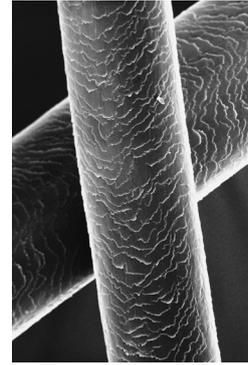
nylon



wool



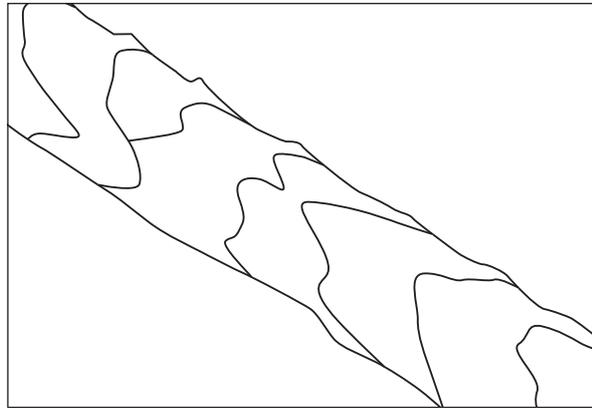
cotton



hair

© Science Photo Library

A scientist collected the fibre below from a crime scene.



- (a) What kind of fibre is this?
Use the pictures above to help you answer this question.

_____ [1]

- (b) Scientists can also collect fingerprint evidence from a crime scene.

- (i) Write down **one** reason why using fingerprints for evidence is better than using fibres.

_____ [1]

- (ii) Whorl and composite are two kinds of fingerprint. Write down the names of the other **two** main types.

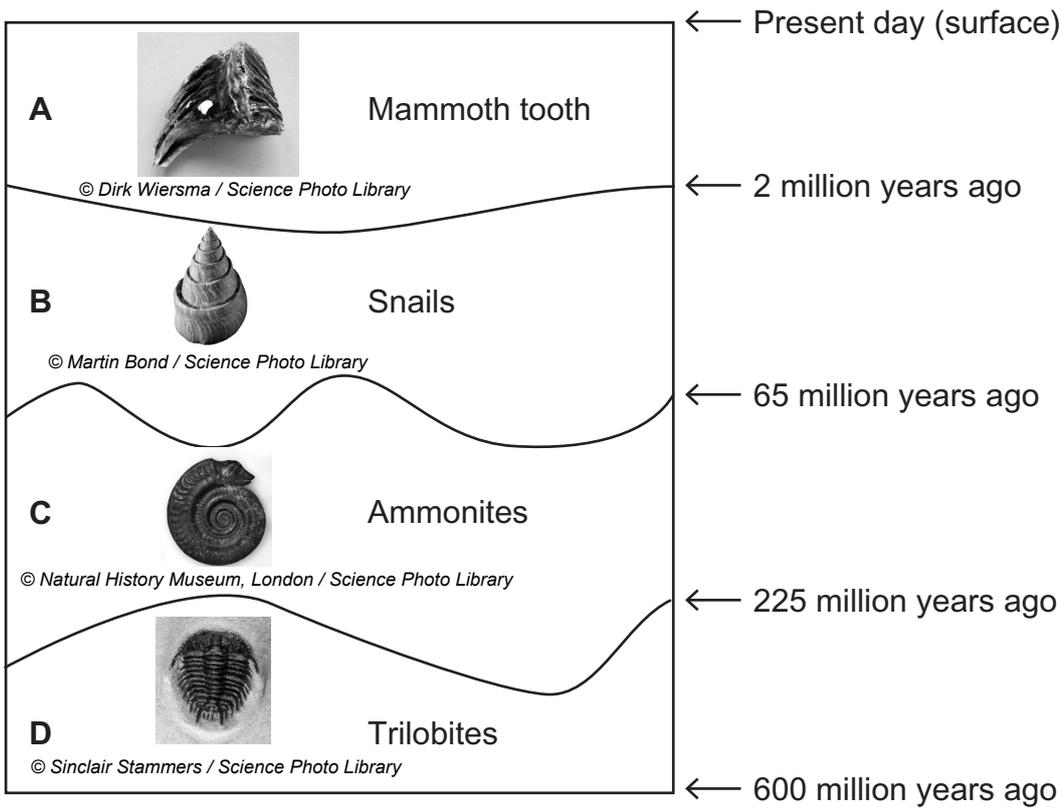
1. _____
2. _____ [2]

Examiner Only

Marks Remark

5 Fossils are often found in rocks. Layers of rock of a similar age have similar types of fossils. The diagram below gives the age of some layers of rock and the fossils found in them.

Examiner Only	
Marks	Remark



(a) Which layer of rock, **A**, **B**, **C** or **D** is the oldest?

_____ [1]

(b) A scientist found fossils of ammonites in a rock. What does this tell him about the age of this rock?

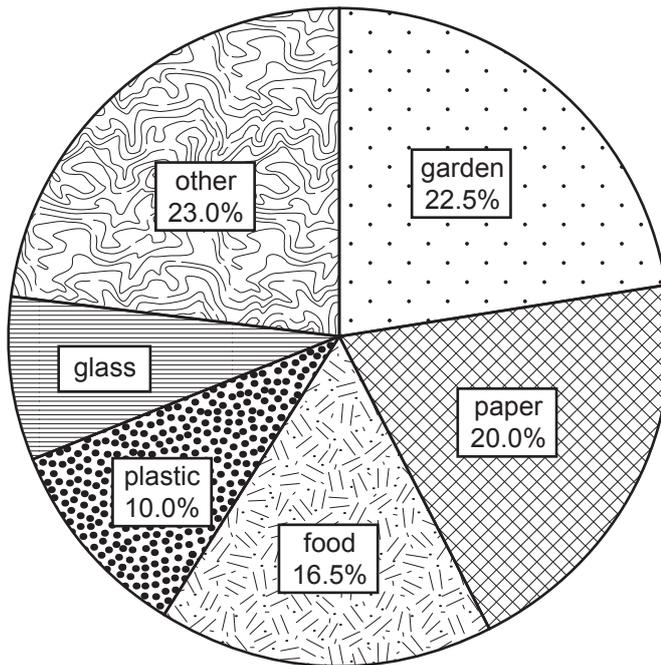
 _____ [1]

(c) Some trilobite fossils were found in rock on the surface of the Earth. Why do you think this rock is now on the surface?

 _____ [1]

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(Questions continue overleaf)

6 Look at the pie chart below. It shows information about the composition of waste in a household bin.



(a) Calculate the percentage of waste that is glass.

(Show your working out.)

_____ % [2]

(b) The Government is trying to get householders to cut down on waste by using the advertising campaign '*reduce, reuse and recycle*'. Match the examples to the correct word. Use lines to do this.

Example

Word

use plastic bags more than once

reduce

use products with less packaging

reuse

recycle

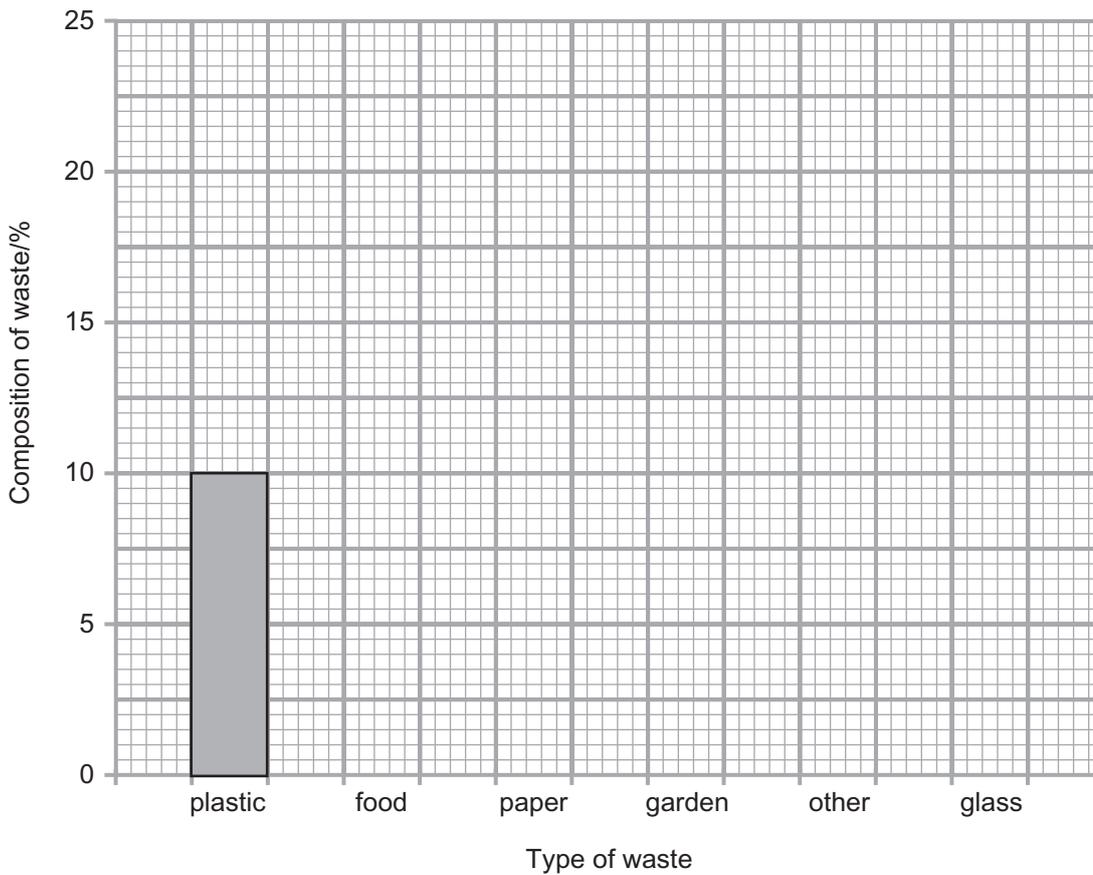
[2]

Examiner Only	
Marks	Remark

(c) Glass is often recycled. Describe the steps in recycling waste glass after it has been delivered to the factory.

[3]

(d) Use the information opposite to complete the bar chart below.



[2]

(e) Write down **two** ways local authorities and councils are encouraging householders to recycle waste.

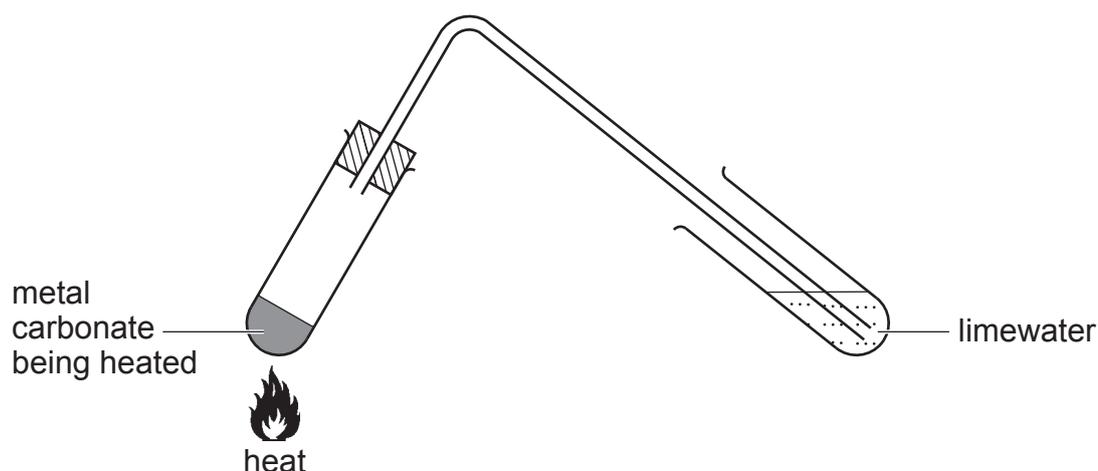
1. _____

2. _____

[2]

Examiner Only	
Marks	Remark

- 7 A pupil investigated the effect of heat on different metal carbonates. The diagram below shows the apparatus she used.



After two minutes she stops heating the test tube and allows it to cool before measuring the mass of the metal carbonate.

The results are shown below.

Chemical	Mass before heating/g	Mass after heating/g	Colour before heating	Colour after heating	Effect on limewater
copper carbonate	2.4	2.0	green	black	turns cloudy
manganese carbonate	2.6	2.1	pink	black	turns cloudy
sodium carbonate	2.5	2.5	white	white	none
zinc carbonate	2.7	2.1	white	white	turns cloudy

- (a) Write down the name of a piece of apparatus that could be used to measure the mass of the metal carbonates.

_____ [1]

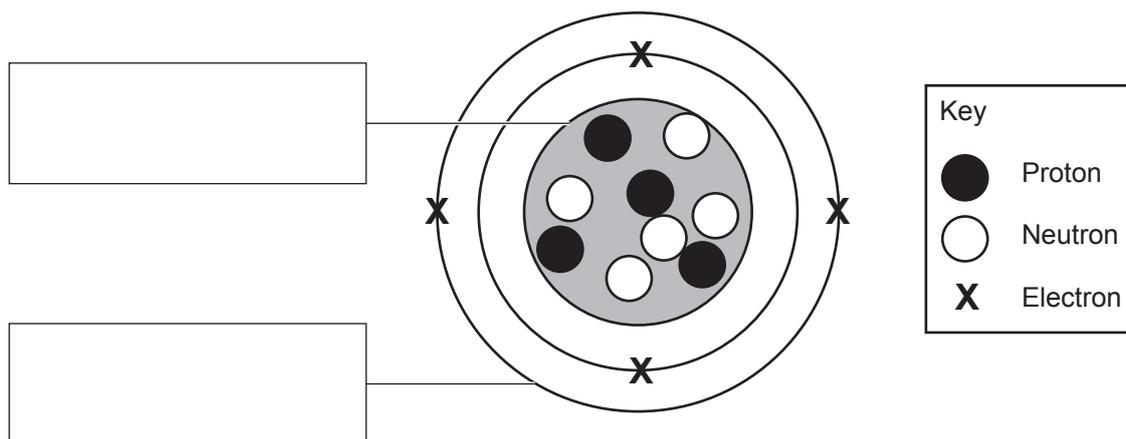
- (b) Suggest why there is a loss in mass when copper carbonate is heated?

_____ [1]

Examiner Only	
Marks	Remark

Examiner Only	
Marks	Remark

8 The diagram below shows an atom of an element.



(a) Finish the diagram above by adding labels to the two boxes. [2]

(b) What is the **atomic number** of this element?

_____ [1]

(c) What is meant by the term **mass number**?

 _____ [1]

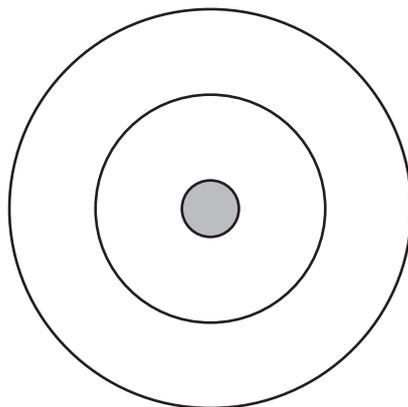
(d) To which group of the Periodic Table does this element belong?
 Explain your answer in terms of its electronic structure.

 _____ [2]

Examiner Only

Marks Remark

- (e) Oxygen has eight electrons. Finish the diagram below to show the electronic structure of oxygen.



[1]

- (f) (i) What is the name of the compound formed in the reaction between magnesium and oxygen?

_____ [1]

- (ii) What is the name given to this type of reaction?

_____ [1]

Examiner Only

Marks Remark

- 9 Look at the table below. It shows the percentage of the most common elements found in the igneous rocks in the Earth's crust.

Element	Percentage
Aluminium	8.1
Calcium	3.6
Iron	5.0
Magnesium	2.1
Oxygen	47.0
Phosphorus	0.1
Potassium	2.6
Silicon	28.0
Sodium	2.9
Titanium	0.6

Use the information in the table and what you know to answer the questions below.

You may find your Data Leaflet helpful.

- (a) Igneous rocks are only one **type** of rock. Write down the names of the other two types.

_____ and _____ [2]

- (b) Write down the name of the most common **metal** in the Earth's crust.

_____ [1]

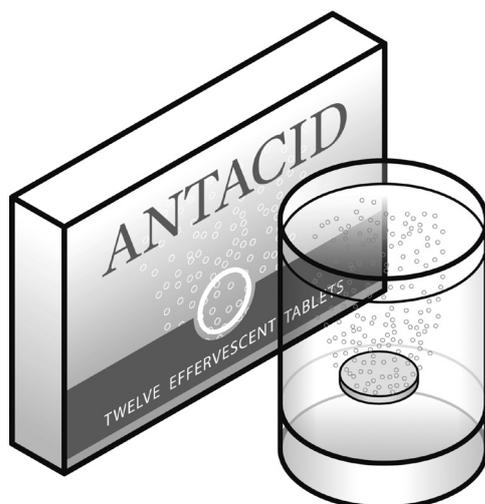
- (c) Calculate the total percentage of alkaline earth metals in the Earth's crust.

_____ % [1]

Examiner Only

Marks Remark

- 11 Acid indigestion is caused by too much hydrochloric acid in the stomach. It can be treated using antacid tablets which contain sodium hydrogencarbonate.



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- (a) Complete the word equation for the reaction between stomach acid and the antacid tablet.



[3]

- (b) Write down one reason why antacid tablets do **not** contain sodium hydroxide.

_____ [1]

THIS IS THE END OF THE QUESTION PAPER

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