



General Certificate of Secondary Education  
2011–2012

Centre Number

71

Candidate Number

## Science: Double Award (Modular)

Using Materials and Understanding Reactions  
End of Module Test

Foundation Tier

# B

[GDB01]



THURSDAY 19 MAY 2011, MORNING

### TIME

45 minutes.

### 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 thirteen** questions.

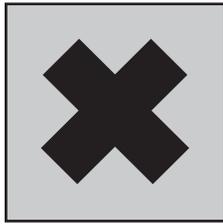
### INFORMATION FOR CANDIDATES

The total mark for this paper is 50.  
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 your use.

For Examiner's use only	
Question Number	Marks
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	

<b>Total Marks</b>	
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- 1 The cleaners in the bucket shown below all have the same **hazard symbol** printed on their container.



- (a) Give two reasons why **hazard symbols** are printed on containers of cleaners.

1. \_\_\_\_\_

\_\_\_\_\_

2. \_\_\_\_\_

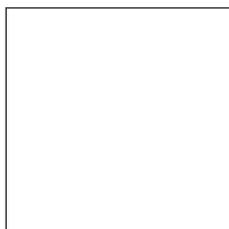
\_\_\_\_\_ [2]

- (b) What does the hazard symbol shown tell you about the substances used to make the cleaners?

\_\_\_\_\_ [1]

The substance used to make the cleaners is also poisonous.

- (c) In the box below, draw the hazard symbol for a poisonous substance.

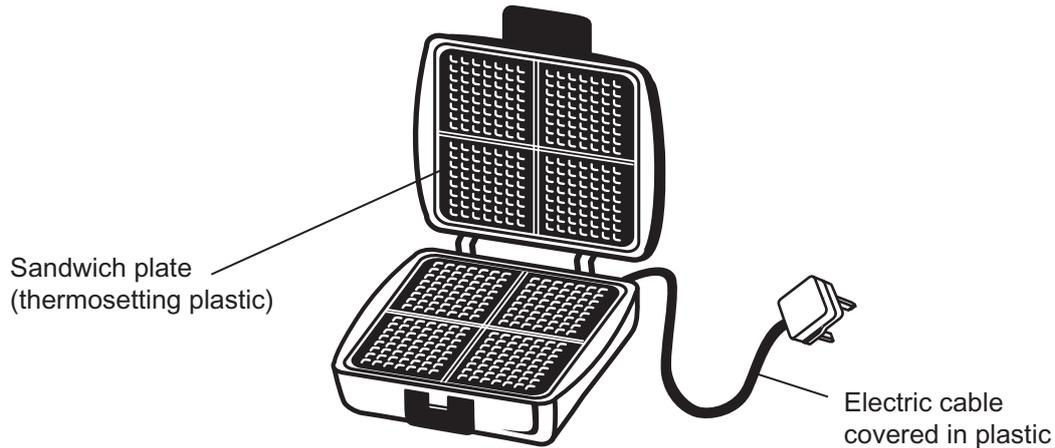


[1]

Examiner Only	
Marks	Remark

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2 Plastic and metal are used to make this toasted sandwich maker.



(a) Why is a thermosetting plastic used to make the sandwich plate?

\_\_\_\_\_ [1]

(b) Why is the electric cable covered in plastic?

\_\_\_\_\_ [1]

The electric cable is made from copper which is a good conductor of electricity.

(c) What other property of copper makes it useful for making electrical wires?

\_\_\_\_\_ [1]

Examiner Only	
Marks	Remark



4 Use your Data Leaflet to help you answer this question.

Circle the correct answer in each part.

(a) The chemical symbol for potassium is:

Po                      K                      P                      [1]

(b) The formula for the sulphate ion is:

$\text{SO}_3^{-2}$                        $\text{SO}_4$                        $\text{SO}_4^{-2}$                       [1]

(c) Cu is the chemical symbol for:

calcium                      copper                      carbon                      [1]

(d) Which of the following statements is true?

All ammonium salts are soluble.	All ammonium salts are insoluble.	Some ammonium salts are soluble.	[1]
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Examiner Only	
Marks	Remark

- 5 Some deodorants are sold in an aerosol spray, similar to the one shown in the diagram below. Aerosols contain a **compressed** gas. When the button is pressed the gas is released carrying the deodorant with it.



- (a) Explain, in terms of particles, why gases can be compressed.

\_\_\_\_\_

\_\_\_\_\_ [1]

- (b) The following warning is printed on aerosol cans.

Do not expose to temperatures above 50°C

What happens to the volume of the gas in the aerosol can when the temperature is increased?

\_\_\_\_\_ [1]

- (c) When the aerosol can is “empty”, a small number of gas particles remain. Shade in the aerosol can below to show the position of the remaining gas particles in the container.



[1]

Examiner Only	
Marks	Remark

6 This question is about atoms. Place a tick (✓) in the box beside each correct answer.

(a) Which one of the following statements about atoms is correct?

The number of protons, electrons and neutrons are always equal

The number of protons and electrons are equal

The number of protons and electrons always adds up to 8

[1]

(b) What name is given to a group of **different types** of atoms which are joined together?

a mixture

an element

a compound

[1]

(c) Where can the neutrons in an atom be found?

in the nucleus

in the shells around the nucleus

in both the nucleus and the shells around the nucleus

[1]

(d) What name is given to an atom which has lost or gained an electron?

a molecule

a compound

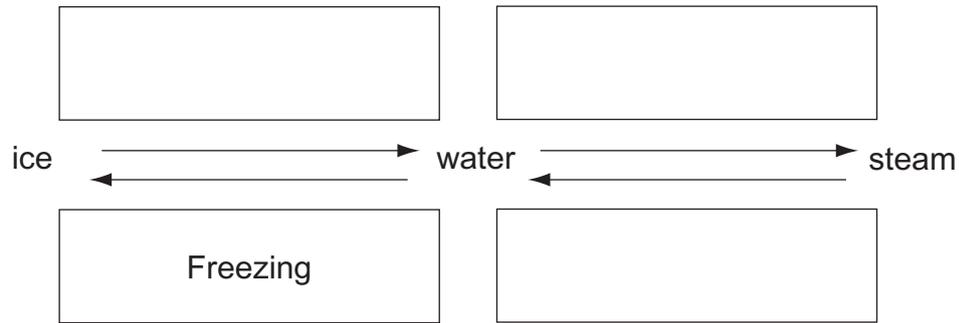
an ion

[1]

Examiner Only	
Marks	Remark

- 7 Water changes to steam when it is heated. When water is cooled it eventually turns to ice.

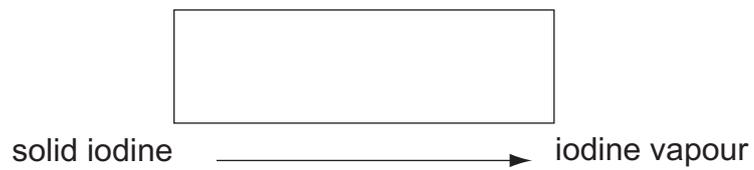
(a) Complete the diagram below to name these changes of state.



[3]

Iodine changes from the solid state to a gas without becoming a liquid.

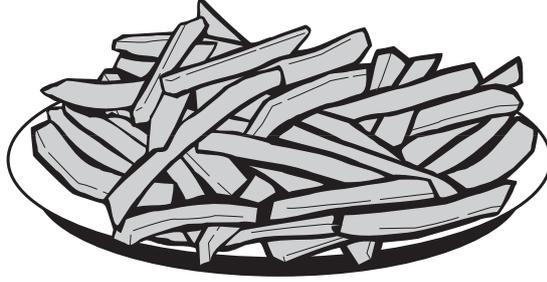
(b) Complete the diagram below to name this change of state.



[1]

Examiner Only	
Marks	Remark

8 The picture below shows some chips.



The smell from hot chips can quickly fill a room.

(a) Name the process which allows the smell to reach your nose.

\_\_\_\_\_ [1]

(b) Explain, with reference to the particles involved, why the smell from hot chips reaches your nose so quickly.

\_\_\_\_\_  
\_\_\_\_\_ [2]

Examiner Only

Marks Remark

9 This question is about chemical formulae.

You may find your Data Leaflet helpful.

(a) How many different **elements** are there in the compound  $\text{Na}_2\text{CO}_3$ ?

\_\_\_\_\_ [1]

(b) Name the **compound**  $\text{KHCO}_3$ .

\_\_\_\_\_ [1]

(c) How many **atoms** are there in a  $\text{Cu}(\text{OH})_2$  molecule?

\_\_\_\_\_ [1]

(d) What is the correct formula for magnesium nitrate?

\_\_\_\_\_ [1]

Examiner Only

Marks Remark

10 The table below has a list of oxides. Some of these react with acids to form salts.

(a) Complete the table by putting YES or NO in the appropriate boxes. The first one has been done for you.

name of oxide	reacts with acids to form salts YES or NO
zinc oxide	YES
nitrogen dioxide	
sodium oxide	
carbon dioxide	
calcium oxide	

[2]

(b) (i) What other compound, apart from a salt, is formed when an acid reacts with an oxide?

\_\_\_\_\_ [1]

(ii) What name is given to this **type** of chemical reaction?

\_\_\_\_\_ [1]

Examiner Only

Marks

Remark

- 11 The table below gives information about the atomic structure of five elements.

Use this information and your Data Leaflet to answer the questions which follow.

element	number of electrons		
	1st shell	2nd shell	3rd shell
A	2	1	
B	2	6	
C	2	4	
D	2	8	1
E	2	8	8

- (a) Which element A, B, C, D or E has an atomic number of 6?

\_\_\_\_\_ [1]

- (b) Which element A, B, C, D or E has a noble gas structure?

\_\_\_\_\_ [1]

- (c) Which two of the elements A, B, C, D or E are **very** reactive?

\_\_\_\_\_ and \_\_\_\_\_ [1]

- (d) Give the **name** of element D.

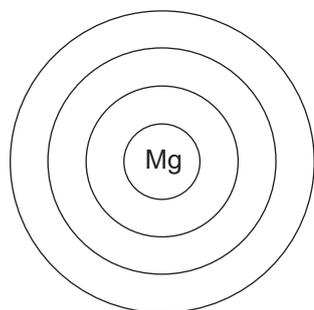
\_\_\_\_\_ [1]

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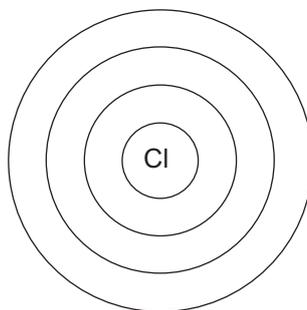
Marks Remark

12 When magnesium reacts with chlorine it forms a compound called magnesium chloride.

(a) On the diagrams below show how **all** the electrons are arranged in a magnesium atom and in a chlorine atom.



magnesium  
atom



chlorine  
atom

[2]

(b) Use words or a diagram to explain how the electrons are rearranged to form magnesium chloride.

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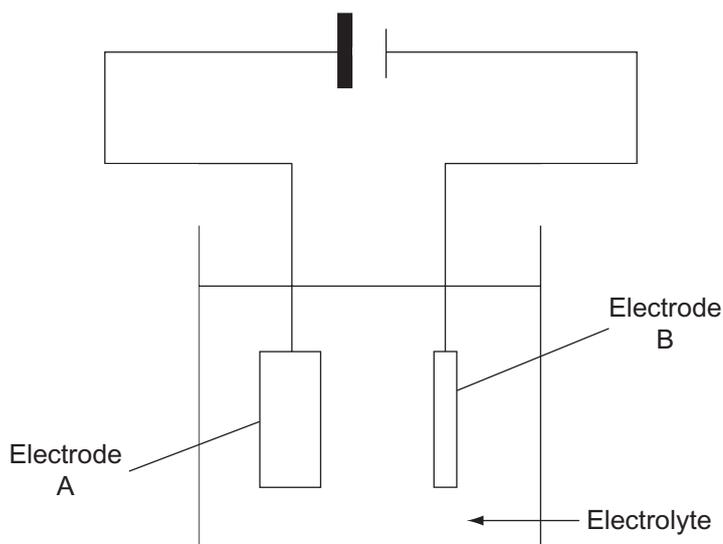
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[3]

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Marks	Remark

13 Copper metal is purified by the process of electrolysis.



(a) Name a suitable electrolyte for the purification of copper.

\_\_\_\_\_ [1]

(b) What material is used to make electrode B?

\_\_\_\_\_ [1]

(c) What happens to the mass of electrode A during the electrolysis?

\_\_\_\_\_ [1]

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**THIS IS THE END OF THE QUESTION PAPER**

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Marks Remark



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