



General Certificate of Secondary Education  
2008–2009

## Science: Double Award (Modular)

Using Materials and Understanding Reactions  
End of Module Test  
Foundation Tier

# B

[GDB01]

WEDNESDAY 25 FEBRUARY 2009, MORNING



StudentBounty.com

71	
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Candidate Number

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### 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 twelve** questions.

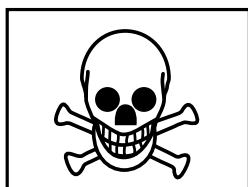
### INFORMATION FOR CANDIDATES

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.

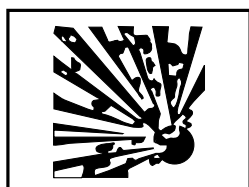
For Examiner's use only	
Question Number	Marks
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	

<b>Total Marks</b>	
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1 The symbols below can be seen on bottles of chemicals in the laboratory.



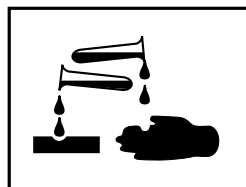
A



B



C



D

(a) What are these symbols called? Circle the correct answer.

chemical  
symbols

danger  
symbols

hazard  
symbols

[1]

(b) Give **two** reasons why these symbols are used on bottles of chemicals.

Reason 1 \_\_\_\_\_

\_\_\_\_\_

Reason 2 \_\_\_\_\_

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

(c) Which symbol, A, B, C or D should be seen on a bottle of a corrosive chemical?

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

(d) What danger is shown by symbol A?

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

Examiner Only

Marks

Remark



3 Powder from the packet below is added to milk to make a milkshake.



(a) Give **three** ways you could help the powder dissolve in the milk.

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[3]

David adds five teaspoons of the powder to a glass of milk and tries to dissolve it. Some of the powder remains at the bottom of the glass.

(b) What type of solution has David made? Circle the correct answer.

saturated

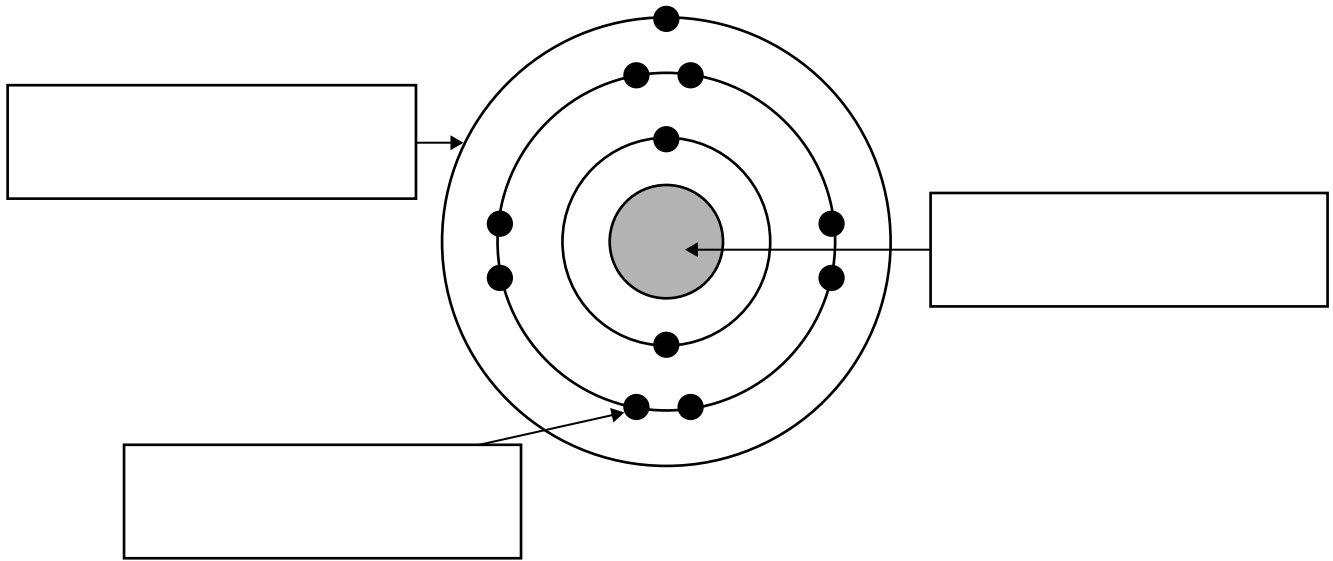
unsaturated

hydrated

[1]

Examiner Only	
Marks	Remark

4 The diagram below shows the structure of an atom.



(a) Label the diagram using words from the list below.

**proton      neutron      electron**  
**shell      nucleus**

[3]

(b) Name the atom shown. You may find your Data Leaflet helpful.

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

Examiner Only	
Marks	Remark

- 5 Complete the table below to show whether the chemical is an element, a compound or a mixture. One has been done for you.

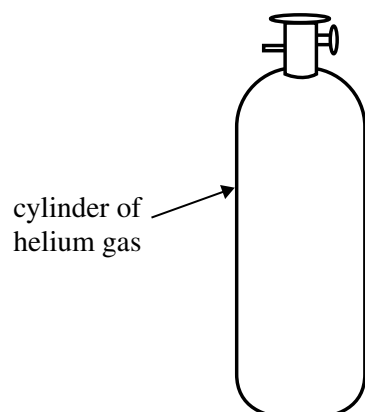
Chemical	Element	Compound	Mixture
silver	✓		
salt solution			
aluminium			
sulphur dioxide			
water			
crude oil			

[5]

Examiner Only	
Marks	Remark

6 The diagram below shows a cylinder containing helium gas. Helium gas is lighter than air.

(a) Shade in the diagram to show where the helium gas is inside the cylinder.



[1]

(b) A balloon is weighed before and after it is filled with helium from the cylinder.

The mass of the balloon before it is filled with helium is 16.0 g.

Circle the correct answer below to show the mass of the balloon after it has been filled with helium.

15.5 g

16.0 g

16.5 g

[1]

(c) If a balloon filled with helium gas is cooled in a fridge, will the mass increase, decrease or stay the same?

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

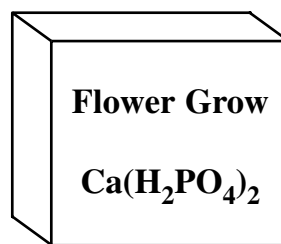
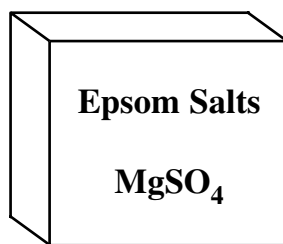
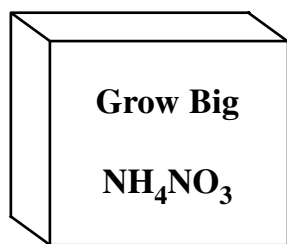
(d) Why are gases stored in cylinders?

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

Examiner Only

Marks Remark

7 The boxes below contain three different types of fertilisers.



(a) Name the four **elements** which are present in the Flower Grow fertiliser.

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_ [3]

(b) The chemical present in Grow Big fertiliser is ammonium nitrate.

(i) How many different **elements** are present in ammonium nitrate?

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

(ii) How many **atoms** are present in a molecule of ammonium nitrate?

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

(c) What is the chemical name for Epsom Salts?

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

Examiner Only

Marks Remark



- 8 Use the Periodic Table in your Data Leaflet to help you fill in the blanks in the table below.

Element	Relative atomic mass	Number of protons	Number of electrons	Number of neutrons
boron	11	5		6
phosphorus	31	15	15	
	39		19	20

[4]

Examiner Only	
Marks	Remark

- 9 Three  $20\text{cm}^3$  samples of water are tested for hardness. The volume of soap solution required to produce a permanent lather with each water sample was recorded in the table below.

Sample	Volume of soap solution required to produce a permanent lather ( $\text{cm}^3$ )		
	Before boiling the water	After boiling the water	After adding washing soda
A	17	17	2
B	21	2	2
C	13	10	2

- (a) What is meant by the term **hard water**?

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

- (b) Which sample of water, **A**, **B** or **C** is the hardest water?

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

- (c) What type of hardness is present in sample **A**?

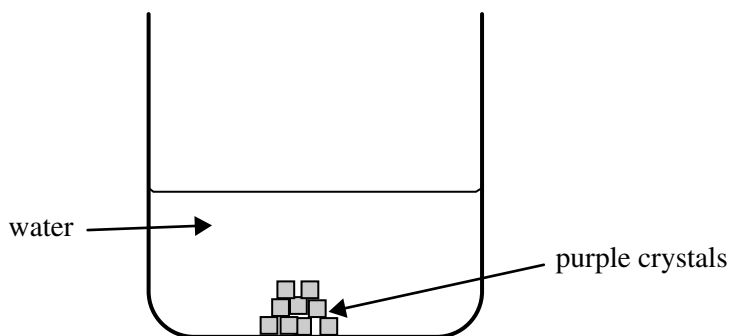
\_\_\_\_\_ [1]

Examiner Only

Marks Remark



- 11 Some purple crystals, which are very soluble in water, were placed in a beaker of water as shown.



- (a) Describe what would be seen happening in the beaker.

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[2]

- (b) Explain, using the idea of the particles involved, how the purple crystals dissolve in water.

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[2]

Examiner Only

Marks Remark

**12** Calcium and chlorine react together to form an ionic compound, calcium chloride.

- (a) The electronic structure of a calcium atom is 2, 8, 8, 2.  
What is the electronic structure of a chlorine atom?

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

- (b) Explain, in terms of electron transfer, how the compound calcium chloride is formed from calcium and chlorine.

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_ [3]

Examiner Only	
Marks	Remark

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

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