

New  
Specification



*Rewarding Learning*

**General Certificate of Secondary Education  
2012–2013**

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**Science: Single Award**

Unit 2 (Chemistry)

Higher Tier

[GSS22]

**TUESDAY 13 NOVEMBER 2012**

**9.15 am–10.30 am**

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**MARK  
SCHEME**

			AVAILABLE MARKS
<b>1</b>	<b>(a) (i)</b> Magnesium	[1]	
	<b>(ii)</b> Copper	[1]	
	<b>(iii)</b> Any <b>two</b> of:		
	● Fast/vigorous reaction		
	● Magnesium dissolves/disappears		
	● Heat given out/exothermic/temperature rise/gets warmer		
	● Blue colour of copper sulfate disappears/fades/solution becomes colourless		
	● Brown/pink solid/copper metal forms		
	● Other suitable	Total [2]	
	<b>(b)</b> Iron [1] + Magnesium sulfate [1] either order	Total [2]	
	<b>(c) (i)</b> $\text{CuSO}_4$	[1]	
	<b>(ii)</b> $\text{MgCl}_2$	[1]	8
<b>2</b>	<b>(a)</b> Aluminium	[1]	
	<b>(b)</b> Metallic character decreases across the period/changes from metal to non-metal.	[1]	
	<b>(c)</b> Chlorine/Argon	[1]	
	<b>(d)</b> Sodium	[1]	
	<b>(e)</b> 2.8.4	[1]	
	<b>(f)</b> NaCl	[1]	6
<b>3</b>	<b>(a)</b> A: Nucleus	[1]	
	B: Proton	[1]	
	C: Electron	[1]	
	<b>(b)</b> 2.7 correct number of shells [1] correct electronic arrangement [1]	[2]	
	<b>(c)</b> The number of protons in an element/atom	[1]	
	<b>(d) (i)</b> 40	[1]	
	<b>(ii)</b> Sodium	[1]	
	<b>(iii)</b> Z/Oxygen	[1]	
	<b>(iv)</b> W/Helium	[1]	10

#### 4 Indicative Content

##### Flame Test

- Use a Flame test rod/inoculating loop
- Clean the rod by dipping into (concentrated) acid or heating in Bunsen Flame
- Dip the rod into the metal solution and place into Bunsen Flame, (record the colour change)/spray the solution into Flame
- Clean the rod and repeat for next solution
- Safety: use goggles and take care with Bunsen Flame

##### Results

- Sodium – Orange/Yellow Flame
- Potassium – Lilac Flame

Band	Response	Mark
A	Candidates must use appropriate specialist terms throughout to describe the experiment, in a logical sequence and using <b>6 or 7</b> of the above Flame test points and must also include a result. They use good spelling, punctuation and grammar and the form and style are of a high standard.	[5–6]
B	Candidates must use some appropriate specialist terms throughout to describe the procedure, using <b>3 to 5</b> of the above points. They use satisfactory spelling, punctuation and grammar and the form and style are of a satisfactory standard.	[3–4]
C	Candidates describe the procedure using only <b>1 or 2</b> of the above points however these are not presented in a logical sequence. They use limited spelling, punctuation and grammar and they have made little use of specialist terms.	[1–2]
D	Response not worthy of credit.	[0]

AVAILABLE  
MARKS

6

			AVAILABLE MARKS	
5	(a)	Carbon fibre reinforced plastic is not as heavy [1] Carbon fibre reinforced plastic is stronger [1] <i>Accept reverse arguments for steel</i>	} must be comparison [2]	6
	(b)	Kevlar [1] it is stronger [1]	[2]	
	(c)	Composite materials combine the properties of more than one material [1] to produce a more useful material [1]	[2]	
6	(a)	Tourism	[1]	11
	(b)	Any <b>one</b> of: ● Stronger Teeth/bones ● Helps prevent heart disease	[1]	
	(c)	$\text{Ca}(\text{HCO}_3)_2 \longrightarrow \underset{[1]}{\text{CaCO}_3} + \underset{[1]}{\text{H}_2\text{O}} + \underset{[1]}{\text{CO}_2}$	[3]	
	(d)	Calcium Chloride [1] Carbon Dioxide [1] <i>Any order</i>	[2]	
	(e)	(i) Both produced a large amount of lather [1] before and after boiling [1]  (ii) S is temporary hard water [1] hardness removed after boiling [1]	[2] [2]	
7	(a)	5 points plotted correctly [2], 3/4 points plotted correctly [1] Smooth curve [1], Dot-Dot (x) Ruler (x)	[3]	5
	(b)	150 [1] allow from graph		
	(c)	Repeat the experiment [1]		

**8 Indicative Content**

## Theory

- Originally one continent called ('Pangaea')
- It broke up and formed other continents
- Two million years ago

## Evidence

- Continents fitted together like a jigsaw
- Rock (pattern) in one continent extended into another continent
- Fossils found in different continents match up across the joint

## Rejection

- Geologists believed that continents could not drift/no evidence at that time/fixed position

Band	Response	Mark
A	Candidates must use appropriate specialist terms throughout to describe the theory, in a logical sequence and using <b>6 or 7</b> of the above points. They use good spelling, punctuation and grammar and the form and style are of a high standard.	[5–6]
B	Candidates must use some appropriate specialist terms throughout to describe the theory, using <b>3 to 5</b> of the above points. They use satisfactory spelling, punctuation and grammar and the form and style are of a satisfactory standard.	[3–4]
C	Candidates describe the theory using only <b>1 or 2</b> of the above points however these are not presented in a logical sequence. They use limited spelling, punctuation and grammar and they have made little use of specialist terms.	[1–2]
D	Response not worthy of credit.	[0]

AVAILABLE  
MARKS

6

