



*Rewarding Learning*

General Certificate of Secondary Education  
2010–2011

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**Science: Single Award (Modular)**

Chemical Patterns and our Environment  
Module 3

Foundation Tier

**[GSC31]**

**THURSDAY 19 MAY 2011, MORNING**

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**MARK  
SCHEME**

			AVAILABLE MARKS	
1	(a)	Lemon juice – citric acid Oven cleaner – sodium hydroxide Milk of magnesia – magnesium hydroxide	[3]	
	(b)	(i) hazard symbols	[1]	
		(ii) toxic/poisonous	[1]	
		(iii) B	[1]	
	(c)	as a warning of danger greater visual impact/than words/easier to understand understood internationally (any one)	[1]	
	(d)	<b>X</b>	[1]	8
2		citric acid, icing sugar, carbon dioxide, fizzing	[4]	4
3	(a)	proton + electron – outer dots neutron – open circle	[3]	
	(b)	electron	[1]	4
4	(a)	(i) thin layer of rock	[1]	
		(ii) liquid + solid rock (accept iron and nickel <b>not</b> iron on its own)	[1]	
	(b)	heat	[1]	
	(c)	(i) line from X to centre or any suitable point	[1]	
		(ii) 7	[1]	
		(iii) Tsunami	[1]	
	(d)	diagram showing cloud of dust/ash labelled	[1]	7
5	(a)	A	[1]	
	(b)	fluorine/bromine/iodine/astatine	[1]	
	(c)	group C	[1]	
	(d)	Be/Mg/Ca/Ba/Sr	[1]	
	(e)	List D [1] because all the elements are from different groups [1]	[2]	6

		AVAILABLE MARKS
6	(a) heartburn (accept Indigestion)	[1]
	(b) it reacts with the acid in the stomach/baking soda is an alkali/ to form water neutralisation worth [2]	[1] [1]
	(c) the baking soda produces CO <sub>2</sub> as a product this builds up escapes produces a gas causing the burp	[1] [1]
7	(a) (i) 8, 9 points correctly plotted [2] 7, 6 points [1] less than 6 [0] joined correctly	[2] [1]
	(ii) 5 cm ± 0.1 must agree with graph	[1]
	(b) the greater the amount, the higher the honeycomb [1] it stops at 28 g [1]	[2]
	(c) 28 g	[1]
	(d) vinegar is an acid/reacts with baking soda [1] it will react to produce (more) CO <sub>2</sub> [1]	[2]
	(e) ethanoic acid/water	[2]
<b>Total</b>		<b>11</b>
		<b>45</b>