



Rewarding Learning

**General Certificate of Secondary Education
2010–2011**

Science: Single Award (Modular)

Chemical Patterns and our Environment
Module 3

Higher Tier

[GSC32]

THURSDAY 19 MAY 2011, MORNING

**MARK
SCHEME**

			AVAILABLE MARKS
1	(a) (i)	8, 9 points correctly plotted [2]	
		7, 6 points [1]	
	less than 6 [0]	[2]	
	joined correctly	[1]	
	(ii)	5 cm \pm 0.1 Must agree with graph	[1]
(b)	the greater the amount, the higher the honeycomb [1] it stops at 28g [1]	[2]	
(c)	28g	[1]	
(d)	vinegar is an acid/reacts with baking soda [1] it will react to produce (more) CO ₂ [1]	[2]	
(e)	ethanoic acid/water	[2]	11
2	(a)	number of protons + neutrons (in nucleus)	[1]
	(b)	2, 8, 2 arrangement	[1]
	(c)	two or more elements [1] combined/chemically joined [1]	[2]
	(d)	magnesium – group 2 oxygen – period 2 magnesium oxide	[3]
3	(a)	molten rock/magma from [1] moves up to the surface [1] gases + molten rock come out of the crater [1] rock flows down the side as lava [1]	Any three [3]
		(b)	it would have speeded up cooling [1] it could cause it to form solid faster [1] it turned some of the molten rock into fine hard particles [1]
	(c)	plates [1] rub against each other [1]	[2]

		AVAILABLE MARKS
4	(a) Aristotle, Newlands, Mendeleev	[1]
	(b) John Newlands – noticed pattern of 8 called this the law of octaves [1]	[1]
	Aristotle – 4 elements – earth, fire, air, water	[1]
	Mendeleev – left gaps atomic mass order	[2]
	(c) – atomic number order more elements	[2]
		7
5	(a) rocks on both continents match – same fossils in each [1] shapes fit together like a jig-saw [1]	[2]
	(b) continental drift	[1]
	(c) people didn't believe that continents could move	[1]
		4
6	(a) (i) caesium	[1]
	(ii) rubidium or caesium	[1]
	(iii) decrease as you move down the group	[1]
	(b) (i) violent reaction/flame gives off gas disappears	[3]
	(ii) one	[1]
	(c) $2\text{Na} + 2\text{H}_2\text{O} \longrightarrow 2\text{NaOH} + \text{H}_2$ (one mark for each correct formula/one for balancing)	[3]
		10
Total		45