



Rewarding Learning

**General Certificate of Secondary Education
2011–2012**

Science: Single Award (Modular)
Chemical Patterns and our Environment
Module 3
Higher Tier
[GSC32]
MONDAY 21 MAY 2012
9.15 am–10.00 am

**MARK
SCHEME**

			AVAILABLE MARKS
1	(a) burette, pipette (not teat) syringe	[1]	6
	(b) 14	[1]	
	(c) 25 (cm ³)	[1]	
	(d) neutralisation	[1]	
	(e) sodium chloride, water (either order)	[2]	
2	(a) to improve appearance/more attractive/appealing	[1]	8
	(b) hyperactivity, allergies, migraines, cancer <i>any two</i>	[2]	
	(c) difference of opinion	[1]	
	one for use	[1]	
	one for avoiding	[1]	
(d) read the labels on the food packets do not buy foods containing additives	[2]		
3	(a) 2, 7 arrangement	[1]	8
	(b) proton: mass 1 electron: charge –1 neutron: mass 1, charge 0	[4]	
	(c) (i) CaO		
	(ii) MgCO ₃		
	(iii) K ₂ SO ₄	[3]	
4	(a) (i) Bishop Ussher	[1]	7
	(ii) 6000 years	[1]	
	(b) use rocks, radioactivity, isotopes – uranium, potassium measure half-life, idea of daughter nuclei <i>any three</i>	[3]	
	(c) rocks containing fossils were present in both Africa and South America/ idea of same fossils in each	[2]	

5 (a) (i) oxygen	[1]	AVAILABLE MARKS
(ii) two elements, (chemically) joined	[2]	
(b) 2 HCl, $\underbrace{\text{MgCl}_2 \quad \text{H}_2\text{O}}_{\text{either order}}$	[3]	6
6 (a) carbon dioxide	[1]	
(b) sodium citrate, water, carbon dioxide (any order)	[3]	
(c) (i) react to form carbon dioxide bubbles of gas cause mixture to rise	[2]	
(ii) sodium tartrate	[1]	
(d) NaHCO_3 $\underbrace{\text{NaCl} \quad \text{CO}_2}_{\text{either order}}$	[3]	10
Total		45