

New  
Specification



*Rewarding Learning*

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

---

**Science: Single Award**

Unit 2 (Chemistry)

Foundation Tier

[GSS21]

**TUESDAY 28 FEBRUARY 2012**

**11.00 am–12.00 noon**

---

**MARK  
SCHEME**

			AVAILABLE MARKS	
1	(a)	low density [1] strong [1] hard [1]	[3]	5
	(b)	it's a conductor (of electricity)/could get an electric shock [1]	[1]	
	(c)	wood/plastic Accept – Steel/Iron	[1]	
2	(a)	vinegar – ethanoic acid baking soda – sodium hydrogencarbonate Milk of magnesia – magnesium hydroxide	[3]	6
	(b) (i)	flammable	[1]	
	(b) (ii)	greater visual impact [1]/internationally understood [1]	[2]	
3	(a)	(citric) acid	[1]	4
	(b)	universal (indicator) Accept – pH paper	[1]	
	(c)	more accurate	[1]	
	(d)	alkaline/alkali	[1]	
4	(a)	plastic bottle	[1]	13
	(b)	plastic bag, glass bottle, aluminium can, plastic bottle	[1]	
		takes too long to decay/do not rot	[1]	
		saves resources/saves energy/saves landfill	[1]	
	(c) (i)	can rot/decay/be broken down [1] by microbes/bacteria/fungi [1]	[2]	
		newspaper	[1]	
	(d)	gives off polluting gas/methane [1]; leaks to water supplies/foul smelling liquid [1]	[2]	
(e) (i)	$100 - 85 [1] = 15\% [1]$	[2]		
	finest/reward/provide recycling bins/Education/Advertising/Posters any 2	[2]		
5	(a)	A = electron [1]/B = neutron [1]	[2]	2

			AVAILABLE MARKS
<b>6</b>	<b>(a)</b> whorl	[1]	5
	<b>(b)</b> aluminium/white powder	[1]	
	<b>(c)</b> sprinkle powder over fingerprint [1] remove excess powder [1] place sticky tape over fingerprint [1] lift off sticky tape (and place on piece of card) [1] <i>any 3</i>	[3]	
<b>7</b>	<b>(a) (i)</b> 3	[1]	10
	<b>(ii)</b> lithium	[1]	
	<b>(b) (i)</b> $37.5 \pm 0.5$	[1]	
	<b>(ii)</b> rubidium	[1]	
	<b>(c)</b> one/alkali metal	[1]	
	<b>(d)</b> as the atomic number increases, the melting point decreases/ converse	[1]	
	reference to change in slope as atomic number increases	[1]	
	<b>(e) (i)</b> fluorine	[1]	
	<b>(ii)</b> bromine	[1]	
	<b>(iii)</b> increase, increase <i>or</i> decrease, decrease	[1]	

- 8 (a) (i)  $18 + 113 [1] = 131 [1]$  [2]
- (ii) hydrogencarbonate [1]
- (b) calcium hydrogencarbonate  $\longrightarrow$  carbon + water dioxide [3]
- (c) forms scum/does not lather [1] with soap [1] [2]
- (d) **Indicative content**
- Take a given volume of bottled water/(req. value)
  - Add soap solution (to get a permanent lather)
  - Record volume of soap solution
  - Repeat procedure for tap water
  - Water which requires most soap is hardest
  - A correctly named piece of apparatus
  - A controlled variable

Band	Response	Mark
A	Using 5–7 of the points shown in the indicative content, candidates describe fully an experiment to test the hardness of two water samples and compare them, in a logical sequence. They use good spelling, punctuation and grammar and the form and style are of a good high standard.	5–6
B	Using 3–4 of the points shown in the indicative content candidates describe fully an experiment to test the hardness of two water samples and compare them, in a logical sequence. They use satisfactory spelling, punctuation and grammar and the form and style are of a satisfactory standard.	3–4
C	Candidates make reference to 1–2 of the points shown in the indicative content using limited spelling, punctuation and grammar. The form and style is of limited standard and they have made little use of the specialist terms.	1–2
D	Response not worthy of credit.	0

[6]

- (e) better taste/stronger teeth and bones/reduce risk of heart disease [1]

**Total**

AVAILABLE  
MARKS

15

60