New Specification

Rewarding Learning

General Certificate of Secondary Education
2012–2013

Science: Single Award

Unit 2 (Chemistry)

Foundation Tier

[GSS21]

TUESDAY 13 NOVEMBER 2012
9.15 am–10.15 am

MARK SCHEME

		AVAILABLE MARKS
1	**(a)**	

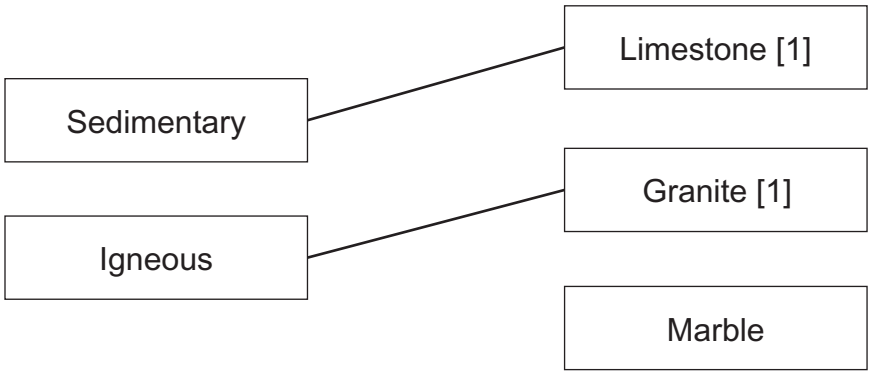
Natural	Synthetic
Silk	**Nylon**
Cotton	**Polythene**

Half mark for each correct answer, rounding down. Total [2]

(b) Any **one** of:

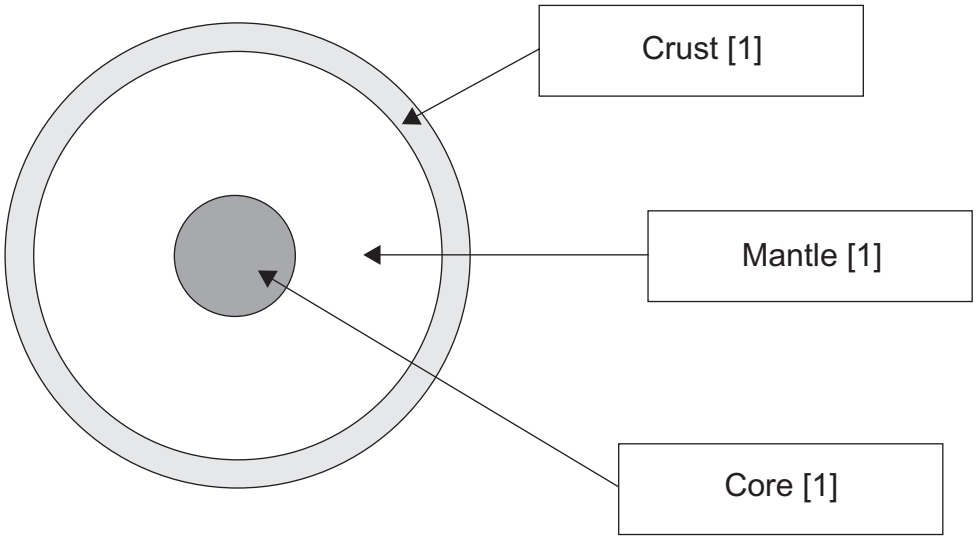
- Plastic is lighter
- Plastic does not rust
- Plastic lasts longer
- Plastic is cheaper
- Other suitable response. (Accept reverse for metal, e.g. metal is heavier)
- Easier to mould [1] 3

2 **(a)**



[2]

(b)



[3] 5

					AVAILABLE MARKS
3	**(a)**				

Solution	pH	Colour with universal indicator	Type of solution
Milk of magnesia	8	Blue	Weak alkali
Oven cleaner	13	Purple	**Strong Alkali [1]**
Lemon juice	5	**Yellow [1]**	Weak acid

Total [2]

(b) Neutral [1]

(c) **(i)**

'Corrosion symbol' Correct diagram [1]

(ii) Corrosive [1]

(d) Any **one** of:
- Easier to see/Greater visual impact
- Internationally understood
- Easier to understand than words
- Can't read

[1] 6

4 **(a)** 4 points correct [2]
(2/3 points correct [1])
Line of best fit not to 0,0 [1]

(b) **(i)** same amount of fuel. [1]

(ii) the amount of energy released increases. [1]

(iii) 4100–4200 kJ [1] 6

5 **(a)** Calcium, Silver, Carbon [3]

(b) 1. Door step and bottle bank collection/deposit [1]
2. Transport to recycling plant [1]
3. Reprocessing of Cullet/crushing of glass/making cullet [1] 6

6 **(a)** 38–20% [1]
18% [1] (correct answer gets full marks)
if one value from graph is correct and correct subtraction [1] [2]

(b) Year: 2006 [1]
Reason: A larger increase in recycling is seen/larger increase in graph [1] 4

				AVAILABLE MARKS
7	**(a)**	**(i)** Magnesium	[1]	
		(ii) Copper	[1]	
		(iii) Any **two** 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)	Iron [1] + Magnesium sulfate [1] either order	Total [2]	
	(c)	**(i)** $CuSO_4$	[1]	
		(ii) $MgCl_2$	[1]	8
8	**(a)**	Aluminium	[1]	
	(b)	Metallic character decreases across the period/changes from metal to non-metal.	[1]	
	(c)	Chlorine/Argon.	[1]	
	(d)	Sodium	[1]	
	(e)	2.8.4	[1]	
	(f)	NaCl	[1]	6
9	**(a)**	A: Nucleus B: Proton C: Electron	[1] [1] [1]	
	(b)	2.7 correct number of shells [1] correct electronic arrangement [1]	[2]	
	(c)	The number of protons in an element/atom	[1]	
	(d)	**(i)** 40	[1]	
		(ii) Sodium	[1]	
		(iii) Z/Oxygen	[1]	
		(iv) W/Helium	[1]	10

10 Indicative Content

AVAILABLE MARKS

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 **6 or 7** 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 **3 to 5** 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 **1 or 2** 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]

6

Total **60**