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**

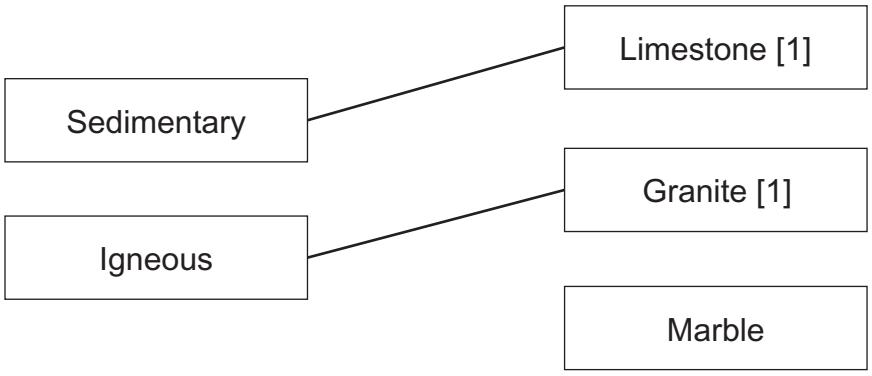
Half mark for each correct answer, rounding down. Total [2]

(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]

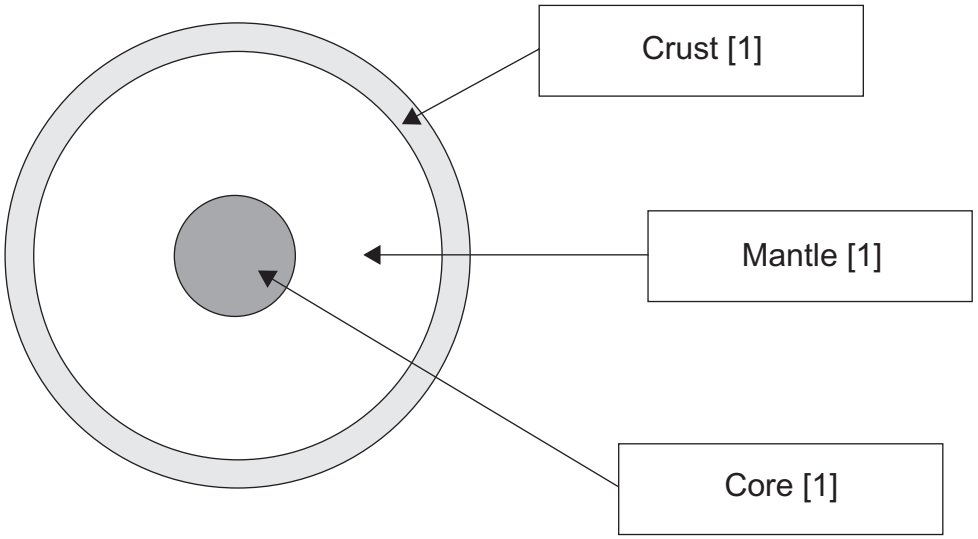
3

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 [1] B: Proton [1] C: Electron [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**