GCSE MARKING SCHEME

SUMMER 2019

GCSE
CHEMISTRY – COMPONENT 1

C410U10-1
C410UA0-1

INTRODUCTION

This marking scheme was used by WJEC for the 2019 examination. It was finalised after detailed discussion at examiners' conferences by all the examiners involved in the assessment. The conference was held shortly after the paper was taken so that reference could be made to the full range of candidates' responses, with photocopied scripts forming the basis of discussion. The aim of the conference was to ensure that the marking scheme was interpreted and applied in the same way by all examiners.

It is hoped that this information will be of assistance to centres but it is recognised at the same time that, without the benefit of participation in the examiners' conference, teachers may have different views on certain matters of detail or interpretation.

WJEC regrets that it cannot enter into any discussion or correspondence about this marking scheme.

GCSE CHEMISTRY COMPONENT 1: Concepts in Chemistry

MARK SCHEME

GENERAL INSTRUCTIONS

Recording of marks

Examiners must mark in red ink.

One tick must equate to one mark (apart from the questions where a level of response mark scheme is applied).

Question totals should be written in the box at the end of the question.

Question totals should be entered onto the grid on the front cover and these should be added to give the script total for each candidate.

Marking rules

All work should be seen to have been marked.

Marking schemes will indicate when explicit working is deemed to be a necessary part of a correct answer.

Crossed out responses not replaced should be marked.

Credit will be given for correct and relevant alternative responses which are not recorded in the mark scheme.

Extended response question

A level of response mark scheme is used. Before applying the mark scheme please read through the whole answer from start to finish. Firstly, decide which level descriptor matches best with the candidate's response: remember that you should be considering the overall quality of the response. Then decide which mark to award within the level. Award the higher mark in the level if there is a good match with both the content statements and the communication statements.

Marking abbreviations

The following may be used in marking schemes or in the marking of scripts to indicate reasons for the marks awarded.

cao   =   correct answer only

ecf   =   error carried forward
bod   =   benefit of doubt

1

Foundation Tier only questions

Question				Marking details	Marks available					
					AO1	**AO2**	**AO3**	**Total**	**Maths**	**Prac**
1	*(a)*			beaker (1) filter paper (1) do **not** accept filter funnel / filter evaporating basin (1) accept basin	3			3		3
	(b)			carbon dioxide	1			1		1
	(c)			award (1) for any of following • bubbling stops / fizzing stops / no bubbling • solid remains / solid left on bottom / excess solid / copper(II) carbonate remains	1			1		1
	(d)			evaporation	1			1		1
	(e)			$ZnCl_2$		1		1		
				Question 1 total	**6**	**1**	**0**	**7**	**0**	**6**

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Question			Marking details	Marks available					
				AO1	AO2	AO3	Total	Maths	Prac
2	*(a)*	(i)	oil (1) water (1) chlorine (1)	3			3		3
		(ii)	red	1			1		1
	(b)		Li$_2$O		1		1		
			Question 2 total	**4**	**1**	**0**	**5**	**0**	**4**

3

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Question				Marking details	Marks available					
					AO1	AO2	AO3	Total	Maths	Prac
3	*(a)*			award (1) for each correct sentence protons and neutrons **both** needed, either order protons and electrons **both** needed, either order 4 9 (2,2)	5			5		
	(b)			bigger than	1			1		
	(c)			69 (2) if answer incorrect award (1) for any indication that formula contains one beryllium atom, one carbon atom and three oxygen atoms e.g. 9 + 12 + 48		2		2	2	
				Question 3 total	**6**	**2**	**0**	**8**	**2**	**0**

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Question				Marking details	Marks available					
					AO1	AO2	AO3	Total	Maths	Prac
4	*(a)*	(i)		oxygen accept O / O_2		1		1		
		(ii)		mercury accept Hg		1		1		
		(iii)		44		1		1		
	(b)	(i)		70		1		1		
		(ii)		gas do **not** accept vapour		1		1		
	(c)			change thermometer (1) accept melting point apparatus award (1) for any of following reasons • needs a scale up to (at least) 120°C • needs a higher maximum temperature • because it only goes up to 110°C change water / use oil / use liquid paraffin (1) award (1) for either of following reasons • need a liquid which boils above 100°C • because water can only reach 100°C • because benzoic acid would not melt in water at 100°C			4	4		4
				Question 4 total	**0**	**5**	**4**	**9**	**0**	**4**

Question				Marking details	Marks available					
					AO1	AO2	AO3	Total	Maths	Prac
5	(a)	(i)	I	Fe^{3+}		1		1		
			II	Fe_2O_3		1		1		
		(ii)		17 / 17.4 / 17.39 (3) if answer incorrect award (2) for $\frac{1.6}{9.2}$ award (1) for 1.6 or for alternative method award (2) for 100 – 82.6 award (1) for $\frac{7.6}{9.2}$		3		3	3	3
		(iii)		leave the experiment until the water level in the tube stops rising			1	1		1
	(b)	(i)		award (2) for all **three** bars plotted correctly award (1) for any **two** bars plotted correctly		2		2	2	2
		(ii)		grease			1	1		1
				Question 5 total	**0**	**7**	**2**	**9**	**5**	**7**

6

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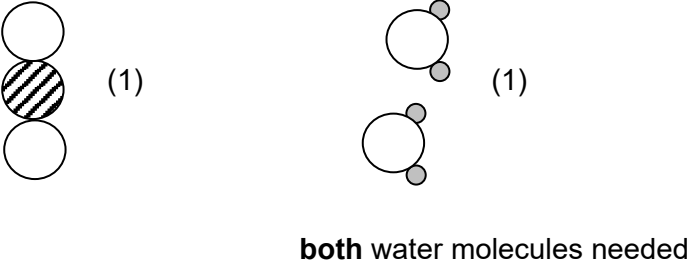
Question				Marking details	Marks available					
					AO1	AO2	AO3	Total	Maths	Prac
6	*(a)*			award (2) for correctly balanced equation $2H_2O_2 \rightarrow \mathbf{2H_2O + O_2}$ if incorrect award (1) for correct products $H_2O + O_2$ **both** needed, either order		2		2		
	(b)			**all** points plotted correctly (1) tolerance ±½ square smooth curve from (0,0) through all points (1)		2		2	2	2
	(c)	(i)		32 ECF possible from curve drawn	1			1	1	1
		(ii)		80 ECF possible from curve drawn		1		1	1	1
	(d)			curve to left of plotted graph (1) curve starts at (0,0) and levels off at 50 cm^3 (±½ square) (1)	1		1	2		2
	(e)			a catalyst lowers the minimum energy required for successful collisions	1			1		
				Question 6 total	**3**	**5**	**1**	**9**	**4**	**6**

Question				Marking details	Marks available					
					AO1	AO2	AO3	Total	Maths	Prac
7	(a)			award (1) for either of following • nano-sized titanium dioxide / it is transparent • nano-sized titanium / it reacts with dirt	1			1		
	(b)			15 nm 15 mm 15 m		1		1	1	
	(c)			nano-sized titanium dioxide breaks down dirt when exposed to UV light (1) nano-sized titanium dioxide prevents the formation of water droplets (1)			2	2		
	(d)			(less detergent) pollutes water / rivers / lakes / water supplies	1			1		
				Question 7 total	**2**	**1**	**2**	**5**	**1**	**0**

Question			Marking details	Marks available					
				AO1	AO2	AO3	Total	Maths	Prac
8	(a)	(i)	diamond hard (1) drill bits (1) graphite electrical conductor (1) electrodes (1)	4			4		
		(ii)	covalent	1			1		
		(iii)	10^{-9}	1			1		
	(b)		award (3) for all **six** correct lines award (2) for any **four** correct lines award (1) for any **two** correct lines 	3			3		
			Question 8 total	9	0	0	9	0	0

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Question				Marking details	Marks available					
					AO1	AO2	AO3	Total	Maths	Prac
9	(a)			**Indicative content** • same volume of water and flask / can • same distance between flame and flask / can • record mass of burner before heating • heat to obtain the same temperature rise • record mass of burner after heating • fuel **A** uses less mass than **B** therefore releases more energy per gram alternative method involves burning equal masses of both fuels and recording the temperature rise; fuel **A** gives greater temperature rise ignore any calculations using hypothetical values and equation from part (b)	3	3		6		6

5-6 marks
Good description of fair test and correct result predicted
There is a sustained line of reasoning which is coherent, relevant, substantiated and logically structured. The candidate uses appropriate scientific terminology and accurate spelling, punctuation and grammar.

3-4 marks
Most elements of a fair test included and attempt to predict result
There is a line of reasoning which is partially coherent, largely relevant, supported by some evidence and with some structure. The candidate uses mainly appropriate scientific terminology and some accurate spelling, punctuation and grammar.

1-2 marks
Attempt at fair test and/or result
There is a basic line of reasoning which is not coherent, largely irrelevant, supported by limited evidence and with very little structure. The candidate uses limited scientific terminology and inaccuracies in spelling, punctuation and grammar.

0 marks
No attempt made or no response worthy of credit.

Question				Marking details	Marks available					
					AO1	AO2	AO3	Total	Maths	Prac
9	(b)			2000 (2) if answer incorrect award (1) for temperature change of 80		2		2	2	2
				Question 9 total	**3**	**5**	**0**	**8**	**2**	**8**

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Question				Marking details	AO1	AO2	AO3	Total	Maths	Prac
10	*(a)*	(i)		alkanes	1			1		
		(ii)		as the number of carbon atoms increases, the boiling point increases			1	1		
	(b)			**both** water molecules needed		2		2		
	(c)			C_8H_{18}		1		1		
				Question 10 total	**1**	**3**	**1**	**5**	**0**	**0**

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Question				Marking details	Marks available					
					AO1	AO2	AO3	Total	Maths	Prac
11	(a)			support (as carbon dioxide concentration has increased), the mean atmospheric temperature has increased (1) oppose (as carbon dioxide concentration has increased), the mean atmospheric temperature has fluctuated / increased and decreased (1)			2	2	2	
	(b)			both have decreased (1) award (1) for any of following • Greenland has seen a **greater** decrease (than Antarctica) • Greenland has decreased by 3000Gt and Antarctica by 1500Gt reference to incorrect values - neutral award (2) for Greenland has decreased by twice as much as Antarctica			2	2	1	
	(c)			award (1) for consequence and (1) for associated explanation e.g. increase in sea-levels (1) causing flooding / coastal erosion / contamination of drinking water (1) or habitat destruction (1) causing polar bears die (1)	2			2		
				Question 11 total	**2**	**0**	**4**	**6**	**3**	**0**

Question			Marking details	Marks available					
				AO1	AO2	AO3	Total	Maths	Prac
12	(a)	(i)	4.5 (2) accept values from 4.4-4.6 if answer incorrect award (1) for any indication of correct rearrangement of the equation e.g. $\frac{mass}{volume}$ or $\frac{45}{10}$		2		2	2	
		(ii)	award (2) for straight line from (0,0) to (10,79) award (1) for any one point marked correctly on grid tolerance ±½ small square			2	2	2	
		(iii)	9.6 – 5.0 = 4.6 (1) density = $\frac{12.5}{4.6}$ = 2.7 therefore metal must be aluminium (1) do **not** credit aluminium with no working		2		2	2	2
	(b)	(i)	(high) electrical conductivity / (good) electrical conductors (1) (high) ductility (1)			2	2		
		(ii)	higher electrical conductivity / better electrical conductor (than aluminium)			1	1		
		(iii)	lower density (than copper)			1	1		
			Question 12 total	**0**	**4**	**6**	**10**	**6**	**2**

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Question				Marking details	Marks available					
					AO1	**AO2**	**AO3**	**Total**	**Maths**	**Prac**
13/1	*(a)*	(i)		hydrogen / H_2 do **not** accept H accept hydrogen sulphide / H_2S		1		1		1
		(ii)		copper / Cu		1		1		1
		(iii)		award (2) for correctly balanced equation $2Fe + 3Cl_2 \rightarrow 2FeCl_3$ if incorrect award (1) for correct product $FeCl_3$		2		2		
	(b)			$Na_2SO_4(aq) + Fe(OH)_2(s)$ award (1) for each correct product award (1) for both state symbols correct award (2) max if balancing attempted	1	2		3		
				Question 13/1 total	**1**	**6**	**0**	**7**	**0**	**2**

Question				Marking details	Marks available					
					AO1	AO2	AO3	Total	Maths	Prac
14/2	(a)	(i)		award (1) for each correct answer						
				A	1					
				B	1					
				G	1					
				C		1				
				E		1		5		
		(ii)		5		1		1		
	(b)			10 neutrons						
				9 electrons **both** needed	1			1		
				Question 14/2 total	**4**	**3**	**0**	**7**	**0**	**0**

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Question				Marking details	AO1	AO2	AO3	Total	Maths	Prac
15/3	*(a)*			2.10 / 2.1		1		1	1	1
	(b)			award (2) for 33.6 / 34 if incorrect award (1) for $\frac{2.1}{6.25}$ ECF possible from (a)	1	1		2	2	2
	(c)			water still present / not all the water has been removed (1) neutral answers - still wet / not stirred enough / only done once heat until constant mass (1) accept - heat for longer / use a higher temperature neutral answer - stir more / repeat			2	2		2
	(d)			add water / re-hydrate (1) it is a reversible reaction / reaction goes both ways (1)	2			2		2
				Question 15/3 total	**3**	**2**	**2**	**7**	**3**	**7**

Question				Marking details	Marks available					
					AO1	AO2	AO3	Total	Maths	Prac
16/4	(a)	(i)		award (1) for any of following • make it easier to see the colour change • easier to see colour change • colour change clearer • end point clearer	1			1		1
		(ii)		26.2		1		1		1
		(iii)		24.6 (2) if incorrect award (1) for 24.55 (mean of two values) or 24.633		2		2	2	2
		(iv)		contain indicator	1			1		1
		(v)		award (1) for either of following • add 25.0 cm^3 of alkali to 24.6 cm^3 of acid • repeat using end-point volumes (of acid and alkali) with no indicator (1) ignore references to evaporation stage	2			2		2
	(b)			40 (1) 20 (1)			2	2	2	2
				Question 16/4 total	**4**	**3**	**2**	**9**	**4**	**9**

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Higher Tier only questions

Question				Marking details	AO1	AO2	AO3	Total	Maths	Prac
5	*(a)*			award (1) for each correct formula $CuSO_4$ $MgCO_3$ HNO_3		1	1 1	3		3
	(b)			on heating (1) ethanol boils at a lower temperature than water (1) ethanol boils first / ethanol boils off leaving water (1) if no other mark credited award (1) for ethanol and water have <u>different</u> boiling points	3			3		3
	(c)			award (1) for spot at 3.6 cm award (1) for second spot anywhere above spot at 3.6		1	1	2		2
				Question 5 total	**3**	**2**	**3**	**8**	**0**	**8**

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Question				Marking details	AO1	AO2	AO3	Total	Maths	Prac
6	*(a)*			−10 to 30	1			1	1	
	(b)			<−10 and >50 °C			1	1	1	
	(c)			graph from 0°C to 60°C (1) highest point at 40°C (1)			2	2	2	
				Question 6 total	**1**	**0**	**3**	**4**	**4**	**0**

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Question				Marking details	AO1	AO2	AO3	Total	Maths	Prac
7	*(a)*	(i)		1920 (1)	1			2		
				burning fossil fuels (1) neutral answers - fossil fuels / deforestation	1					
		(ii)		award (1) for any consequence and (1) for linked explanation e.g. (increased) global warming …. leading to sea-level rise sea-level rise …. leading to coastal erosion / flooding of coastal areas ice caps melting …. leading to sea-level rise climate change …. leading to habitat loss (increased) atmospheric temperature …. leading to disruption of weather patterns / more extreme weather accept any sensible alternatives and note that most points here could be classed as consequences or explanations	2			2		
	(b)	(i)		increases		1		1		
		(ii)		pH increases (1) neutral answer - acidity decreases lime is a base / neutralises the lake acidity (1) accept - lime is an alkali	2			2		
				Question 7 total	**6**	**1**	**0**	**7**	**0**	**0**

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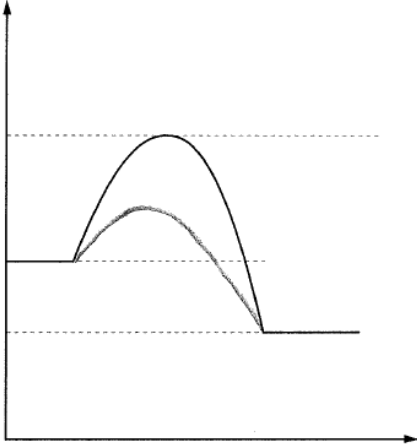| Question				Marking details	Marks available					
					AO1	AO2	AO3	Total	Maths	Prac
8	(a)			cryolite (1) accept - Na_3AlF_6 lowers the melting point of aluminium oxide (1) neutral answer - makes the process cheaper	2			2		
	(b)			at the cathode $\quad Al^{3+} + 3e^- \rightarrow Al \quad$ (1) at the anode $\quad 2O^{2-} \rightarrow O_2 + 4e^- \quad$ (1) accept $2O^{2-} - 4e \rightarrow O_2$		2		2		
	(c)			close to coast to import bauxite / raw material / aluminium ore (1) neutral answer - reference to export of aluminium close to power station due to need of huge amounts of electricity (1)	2			2		
				Question 8 total	**4**	**2**	**0**	**6**	**0**	**0**

Question				Marking details	Marks available					
					AO1	AO2	AO3	Total	Maths	Prac
9	*(a)*			no mark for opinion award (1) each for any **two** reasons supporting the same opinion award (1) max if reasons support different opinions **no - it will not** • takes too long / slow process • only small amounts of metal obtained • only extract copper from top layer of soil / shallow mining • dependent on growing conditions / needs suitable rainfall **yes - it will** • less environmental damage / no open-cast mines / no SO_2 pollution • lower grade ores can be used/ high grade ores all used up • decontaminates soil of toxic metals			2	2		

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Question			Marking details	Marks available					
				AO1	AO2	AO3	Total	Maths	Prac
(b)	(i)		displacement (1) award (1) for any explanation • adding a metal higher in reactivity series **displaces a metal lower** in series • adding a metal **above copper** (in reactivity series) displaces copper from solution • adding a more reactive metal (than copper) displaces it from solution • add iron because it is above copper (in the reactivity series) so it will displace it from solution neutral answer - Cu^{2+} gains electrons **alternative method** electrolysis (1) (aqueous) Cu^{2+} ions **attracted to cathode** forming copper (1) neutral answer - Cu^{2+} gains electrons	2			2		2
	(ii)		reduction is gain of electrons (1) Cu^{2+} ions gain electrons to form Cu atoms (1) credit possible for equations e.g. $Cu^{2+} + 2e^- \rightarrow Cu$ (2) $Fe + CuSO_4 \rightarrow FeSO_4 + Cu$ (1)		2		2		
			Question 9 total	**2**	**2**	**2**	**6**	**0**	**2**

Question				Marking details	AO1	AO2	AO3	Total	Maths	Prac
10	(a)			appropriate scales - use minimum half of grid (1)		1				
				all points plotted correctly (1) tolerance ± ½ square		1				
				straight line of best fit passing through (0,0) (1)		1		3	3	3
	(b)			40 (2)						
				if incorrect award (1) for 0.025 read from graph		2		2	2	2
	(c)			number of (acid) particles (per unit volume) doubled (1)	1					
				chance of collision doubled (1)		1		2	1	
				award (1) for <u>more</u> particles linked to <u>greater</u> chance of collision						
	(d)			award (1) for reference to gas being formed by reaction						
				award (1) for indication of measurement to be made **and** time e.g. • measure volume of gas formed over time • measure time taken for mass of container to fall by given amount		2		2		2

25

Question			Marking details	AO1	AO2	AO3	Total	Maths	Prac
(e)	(i)		increased surface area (1) award (1) for any of following • greater chance of (successful) collisions • greater frequency of (successful) collisions • more (successful) collisions per second	2			2		1
	(ii)		award (1) for any of following • particles move faster • particles have more energy • more particles have the activation energy award (1) for any of following • greater chance of (successful) collisions • greater frequency of (successful) collisions • more (successful) collisions per second	2			2		1
			Question 10 total	**5**	**8**	**0**	**13**	**6**	**9**

Question				Marking details	Marks available					
					AO1	AO2	AO3	Total	Maths	Prac
11	*(a)*			C=C / double bond breaks (1) each carbon atom bonds with one bromine atom (1) accept $Br-C-C-Br$ (with H atoms)	2			2		
	(b)	(i)		award (1) for any of following $CH_3CH=CHCH_3$	1			1		
		(ii)		propan-2-ol	1			1		
	(c)			(–COOH structure) neutral answer —COOH	1			1		
				Question 11 total	**5**	**0**	**0**	**5**	**0**	**0**

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Question				Marking details	AO1	AO2	AO3	Total	Maths	Prac
12	*(a)*	(i)		142 (2) if incorrect award (1) for (4 × 464) / 1856		2		2	2	
		(ii)		214 / −214 (2) if incorrect award (1) for 1856 + 498 / 2354 ECF possible from (i)		2		2	2	
	(b)	(i)		**A**	1			1		
		(ii)		pathway with lower activation energy	1			1		
				Question 12 total	**2**	**4**	**0**	**6**	**4**	**0**

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Question				Marking details	Marks available					
					AO1	AO2	AO3	Total	Maths	Prac
13	(a)			low temperature system will favour exothermic reaction / forward reaction (1) equilibrium moves to the right (1) low pressure system will favour side with more gaseous particles (1) equilibrium moves to the left / backward reaction favoured (1)	1 1		1 1	4		
	(b)	(i)		300 °C **and** 220 atm **both** needed		1		1	1	
		(ii)		award (2) for curve which • goes from (0,0) • has similar shape to 300 and 500 °C curves • reaches yield between 50 and 75 % award (1) for curve which • goes from (0,0) • has similar shape to 300 and 500 °C curves • reaches yield between 24 and 49 %			2	2		
	(c)	(i)		4NH₃ + **5**O₂ → **4**NO + **6**H₂O		1		1		
		(ii)		2NO + O₂ → 2NO₂ (2) if incorrectly balanced award (1) for correct formulae of reactants **and** products		2		2		
				Question 13 total	**2**	**4**	**4**	**10**	**1**	**0**

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Question				Marking details	AO1	AO2	AO3	Total	Maths	Prac
14	*(a)*	(i)		test **3** / flame test (1)						
				calcium gives brick-red flame and sodium gives yellow/orange flame			2	2		2
		(ii)		test **1** / silver nitrate (1)						
				(potassium) chloride gives a white precipitate (1)						
				(potassium) iodide gives a yellow precipitate (1)			3	3		3
		(iii)		test **2** / add sodium hydroxide and warm (1)						
				ammonium (chloride) gives pungent smell / gas which turns red litmus blue (1)						
				magnesium (chloride) gives no reaction / white precipitate (1)			3	3		3
	(b)			$Ba^{2+}(aq) + SO_4^{2-}(aq) \rightarrow BaSO_4(s)$		1		1		
				Question 14 total	**0**	**1**	**8**	**9**	**0**	**8**

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Question				Marking details	Marks available					
					AO1	AO2	AO3	Total	Maths	Prac
15				**Indicative content** • sodium needs to lose one electron to achieve full outer shell • chlorine needs to gain one electron to achieve full outer shell • dot and cross diagram for sodium chloride • ionic bonding • shared pairs of electrons for both atoms to achieve full outer shells • dot and cross diagram for methane • covalent bonding • dot and cross diagrams do not show ▪ 3D lattice of ionic sodium chloride - giant structure ▪ 3D shape of methane molecule - simple molecular ▪ relative strength of forces between ions, between atoms, between molecules ▪ relative sizes of particles	4	2		6		
				5-6 marks Dot and cross diagrams for both compounds showing good understanding of ionic and covalent bonding; reference to structure types; attempt at description of limitations in predicting structure type *There is a sustained line of reasoning which is coherent, relevant, substantiated and logically structured. The candidate uses appropriate scientific terminology and accurate spelling, punctuation and grammar.* **3-4 marks** Basic dot and cross diagrams for both compounds clearly differentiating between ionic and covalent bonding *There is a line of reasoning which is partially coherent, largely relevant, supported by some evidence and with some structure. The candidate uses mainly appropriate scientific terminology and some accurate spelling, punctuation and grammar.* **1-2 marks** Attempt at dot and cross diagram for sodium chloride and/or methane *There is a basic line of reasoning which is not coherent, largely irrelevant, supported by limited evidence and with very little structure. The candidate uses limited scientific terminology and inaccuracies in spelling, punctuation and grammar.* **0 marks** *No attempt made or no response worthy of credit.*						
				Question 15 total	**4**	**2**	**0**	**6**	**0**	**0**

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Question				Marking details	AO1	AO2	AO3	Total	Maths	Prac
16	*(a)*			2.5×10^{-3} (2) if incorrect award (1) for 0.03 s		2		2	2	
	(b)			3.125 / 3.13 / 3.1 (2) if incorrect award (1) for correct conversion of units 75 dm^3 = 75000 cm^3 or 24000 cm^3 = 24 dm^3	1	1		2	2	
	(c)			135.4 / 135.6 / 130 (3) ECF possible from part (b) if incorrect award (1) each for either of following $\frac{2}{3} \times 3.125$ / 2.083 $M_r(NaN_3) = 65$		3		3	3	
	(d)			$10Na + 2KNO_3 \rightarrow N_2 + K_2O + 5Na_2O$ (2) if incorrect award (1) for correct formula KNO_3		2		2	1	
	(e)				1			1		
			Question 16 total		**2**	**8**	**0**	**10**	**8**	**0**

32

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FOUNDATION TIER

SUMMARY OF MARKS ALLOCATED TO ASSESSMENT OBJECTIVES

Question	AO1	AO2	AO3	TOTAL MARK	MATHS	PRAC
1	6	1	0	7	0	6
2	4	1	0	5	0	4
3	6	2	0	8	2	0
4	0	5	4	9	0	4
5	0	7	2	9	5	7
6	3	5	1	9	4	6
7	2	1	2	5	1	0
8	9	0	0	9	0	0
9	3	5	0	8	2	8
10	1	3	1	5	0	0
11	2	0	4	6	3	0
12	0	4	6	10	6	2
13	1	6	0	7	0	2
14	4	3	0	7	0	0
15	3	2	2	7	3	7
16	4	3	2	9	4	9
TOTAL	48	48	24	120	30	55

HIGHER TIER

SUMMARY OF MARKS ALLOCATED TO ASSESSMENT OBJECTIVES

Question	AO1	AO2	AO3	TOTAL MARK	MATHS	PRAC
1	1	6	0	7	0	2
2	4	3	0	7	0	0
3	3	2	2	7	3	7
4	4	3	2	9	4	9
5	3	2	3	8	0	8
6	1	0	3	4	4	0
7	6	1	0	7	0	0
8	4	2	0	6	0	0
9	2	2	2	6	0	2
10	5	8	0	13	6	9
11	5	0	0	5	0	0
12	2	4	0	6	4	0
13	2	4	4	10	1	0
14	0	1	8	9	0	8
15	4	2	0	6	0	0
16	2	8	0	10	8	0
TOTAL	48	48	24	120	30	45