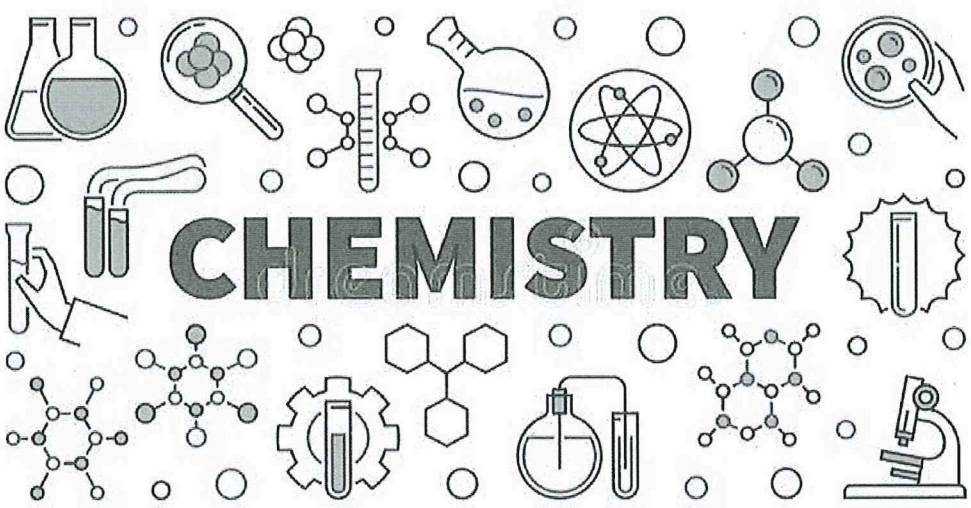
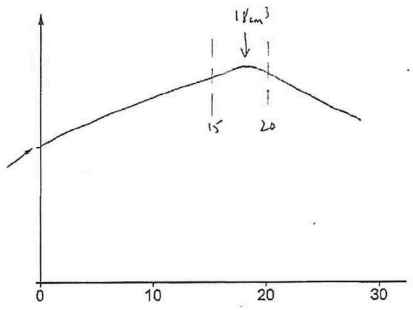


WJEC Chemistry 2

Option – Foundation Tier

2.2 Mark Scheme

Common questions

Question				Marking details	Marks available					
					AO1	AO2	AO3	Total	Maths	Prac
7/1	(a)			$HCl + NaOH \rightarrow NaCl + H_2O$ reactants (1) products (1) ignore any attempt at balancing		2		2		
	(b)	(i)		pipette	1			1		1
		(ii)		any of following • identify the end point • identify when neutralisation has taken place • identify when all the alkali has been used up	1			1		1
		(iii)		18.0 accept 18 / 17.9		1		1	1	
		(iv)		 award (1) for shape rising from starting temperature line and falling award (1) for peak maximum in range 15-20			2	2		2
		(v)		36.0 accept 36 ecf possible from part (iii)			1	1		
				Question 7/1 total	**2**	**3**	**3**	**8**	**1**	**4**

Common questions

Question				Marking details	Marks available					
					AO1	AO2	AO3	Total	Maths	Prac
8/1	*(a)*	(i)		6.5		1		1	1	1
		(ii)		1365 (2) if answer incorrect award (1) for 50 × 4.2 × 6.5 ECF possible from incorrect temperature rise		2		2	2	2
		(iii)		21.5 - it has returned to initial / room temperature **both** needed			1	1		
	(b)			all points plotted correctly (1) tolerance ± ½ small square smooth line passing through the points (1)		1	1	2	2	2
	(c)			hydrochloric acid - greater temperature rise **both** needed			1	1		1
	(d)	(i)		award (1) for either of following • heat still lost (to the surroundings) • wouldn't stop heat being lost (to the surroundings) neutral answer - no lid used			1	1		1
		(ii)		award (1) for any of following • lid • stacked polystyrene cups • lag the polystyrene cup			1	1		1
				Question 8/1 total	**0**	**4**	**5**	**9**	**5**	**8**

Question				Marking details	Marks available					
					AO1	AO2	AO3	Total	Maths	Prac
9/2	*(a)*	(i)		award (1) for either of following magnesium oxide magnesium hydroxide accept MgO / $Mg(OH)_2$ do **not** accept magnesium / magnesium carbonate		1		1		1
		(ii)		**B** copper(II) chloride / copper chloride (1) accept $CuCl_2$ **C** carbon dioxide (1) accept CO_2		2		2		2
	(b)			$Zn + 2HCl \rightarrow ZnCl_2 + H_2$ award (1) for products award (1) for balancing only if all reactants and products correct		2		2		
	(c)			award (1) for any difference • bubbles / gas formed faster • magnesium disappears faster award (1) for sensible explanation • magnesium more reactive (than zinc) • magnesium above zinc in reactivity series neutral answer - gets hotter	2			2		2
				Question 9/2 total	**2**	**5**	**0**	**7**	**0**	**5**

Foundation Tier only questions

Question				Marking details	Marks available					
					AO1	AO2	AO3	Total	Maths	Prac
1	(a)			award (1) for each correct label beaker (filter) funnel (evaporating) basin accept (evaporating) dish (electronic) balance accept (weighing) scales	4			4		4
	(b)			bubbling increases ☐ bubbling stops ✓ bubbling decreases ☐	1			1		1
	(c)			carbon dioxide	1			1		1
	(d)			filtration (1) evaporation (1)	2			2		2
	(e)			13.9		1		1	1	1
				Question 1 total	**8**	**1**	**0**	**9**	**1**	**9**

Question	Marking details	Marks available					
		AO1	AO2	AO3	Total	Maths	Prac
6	**Indicative content** • scale that measures strength of an acid/alkali • pH 7 is neutral • lower than pH 7 acidic • higher than pH 7 alkaline • acid strength decreases from 1 to 6 • alkali strength increases from 8 to 16 • pH values given by colour seen using universal indicator • battery acid ⇨ red ⇨ pH 1 ⇨ strong acid • milk ⇨ yellow ⇨ pH 6 ⇨ weak acid • water ⇨ (pale) green ⇨ pH 7 ⇨ neutral • drain cleaner ⇨ purple ⇨ pH 14 ⇨ strong alkali	2	4		6		6
	5-6 marks Good description of all aspects of scale; correct description of pH of substances *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** Description including reference to acids, alkalis and neutral substances; correct description of pH of two substances *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** Reference to acids, alkalis or neutral substances; colours linked to pH *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 6 total	**2**	**4**	**0**	**6**	**0**	**6**

FOUNDATION TIER ONLY QUESTIONS

Question				Marking details	Marks available					
					AO1	AO2	AO3	Total	Maths	Prac
1	(a)	(i)		accept **either** of following • hand wash • drain cleaner accept blue / purple			1	1		1
		(ii)		battery fluid accept red			1	1		1
		(iii)		NaOH		1		1		
	(b)	(i)		**C** (1) accept sodium carbonate fizzing (1)			2	2		2
		(ii)		lighted / burning splint (1) do **not** accept <u>glowing</u> splint gives squeaky pop (1)	2			2		2

Question				Marking details	Marks available					
					AO1	AO2	AO3	Total	Maths	Prac
		(iii)		**C** (1) accept sodium carbonate award (1) for **any** of following • lowest (temperature) increase • (temperature) increases less • (temperature) increases only a little • temperature <u>only</u> goes up by 5°C accept least energy given out neutral answer – lowest temperature			2	2		2
				Question 1 total	**2**	**1**	**6**	**9**	**0**	**8**