



CHEMISTRY

0620/51

Paper 5 Practical

October/November 2017

MARK SCHEME

Maximum Mark: 40

Published

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Mark schemes should be read in conjunction with the question paper and the Principal Examiner Report for Teachers.

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Question	Answer	Marks
1(a)	temperature boxes completed correctly with decreasing trend shown	1
	results comparable to the supervisor's	1
1(b)	temperature boxes completed correctly with increasing trend shown	1
	results comparable to the supervisor's	1
1(c)	all points plotted	2
	two smooth line graphs	1
	both graphs appropriately labelled	1
1(d)(i)	value from graph	1
	shown clearly	1
1(d)(ii)	value from graph	1
	shown clearly	1
1(e)	exothermic	1
1(f)	room temperature / initial temperature from table AND reaction has finished / all the solid has dissolved	1

Question	Answer		Marks
1(g)	source of error	improvement	4
	heat losses	use a lid / lag the apparatus	
	use of a measuring cylinder	use a pipette/burette	
	wet cup in the second experiment	use new/another cup OR dry the cup	
	the solid absorbs water from the air	store in a sealed container / airtight container / desiccator	
	only done once	repeat and average	
	different masses of solids used / masses of solids not measured	use same mass of solid / weigh the solids	
1(h)	fewer data / less detail / fewer readings / graph not as good / not enough readings taken whilst the solid is reacting		1

Question	Answer	Marks
2(a)	blue (liquid)	1
2(b)(i)	green	1
	precipitate	1
2(b)(ii)	green solution / precipitate dissolves	1
2(b)(iii)	(red) litmus paper / Universal Indicator paper	1
	(red litmus paper) turns blue / (Universal Indicator paper) turns purple	1
2(c)	pH 8–11	1
2(d)(i)	dark / deep blue (solution)	1
2(d)(ii)	blue	1
	precipitate	1
2(e)	grey-green	1
	precipitate	1
2(f)	chromium	1
	nitrate	1
2(g)	ammonia / NH_3	1

Question	Answer	Marks
3	<i>heating to dryness method</i> max [6]: M1 weigh (any) sample of washing soda M2 heat (to remove water of crystallisation) M3 in named container M4 cool M5 reweigh M6 repeat heating M7 to constant mass M8 appropriate calculation suggested for the percentage of water <i>mass of water method</i> max [6]: M1 weigh (any) sample of washing soda M2 heat to remove water of crystallisation M3 in named container M4 using apparatus capable of collecting water (vapour) M5 cool / condense (water vapour) M6 continue until no more collects M7 weigh water M8 appropriate calculation suggested for the percentage of water	6



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Cambridge International General Certificate of Secondary Education

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Question	Answer	Marks
1(a)	initial and final temperature boxes completed AND results ascending in magnitude with more solid S added	1
	results comparable to the supervisor's	1
1(b)	initial and final temperature boxes completed AND results ascending in magnitude with more solid T added	1
	results comparable to the supervisor's	1
1(c)	all points plotted	2
	two straight lines of best fit drawn with a ruler	1
	both graphs appropriately labelled	1
1(d)(i)	value from graph	1
	shown clearly	1
1(d)ii	value from graph	1
	shown clearly	1
1(e)	exothermic	1
1(f)	<i>change to the experiments</i> use burette/pipette use insulation/lid use a new cup / dry the cup	1
	<i>explanation (to match change)</i> more accurate (than measuring cylinder) reduce heat losses remove water left from the previous experiment	1
1(g)	repeat experiments	1

Question	Answer	Marks
1(h)	lower temperatures measured / smaller temperature changes	1
	changed is halved / more water (to heat)	1

Question	Answer	Marks
2(a)	white (crystals)	1
2(b)	bubbles / fizz	1
	limewater	1
	(turns) milky	1
2(c)	carbon dioxide	1
2(d)	yellow	1
2(e)	sodium	1
	carbonate	1
2(f)	white	1
	precipitate	1
2(g)(i)	white	1
	precipitate	1

Question	Answer	Marks
2(g)(ii)	dissolves / clears / soluble	1
	bubbles / fizz / effervescence	1
2(h)	non-transition metal / Group II metal / barium / calcium / magnesium	1
	chloride	1

Question	Answer	Marks
3	<i>max [6]:</i> M1 weigh specified number of nail(s) / specified number of nails M2 immerse in same volume M3 samples of tap water and distilled water (in two test-tubes) M4 for suitable time M5 dry (in oven) M6 reweigh nails M7 compare / conclusion	6