

CAMBRIDGE INTERNATIONAL EXAMINATIONS**Cambridge International General Certificate of Secondary Education****MARK SCHEME for the October/November 2015 series****0620 CHEMISTRY****0620/62**

Paper 6 (Alternative to Practical), maximum raw mark 60

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Abbreviations used in the Mark Scheme

- ; separates marking points
- / separates alternatives within a marking point
- () the word or phrase in brackets is not required but sets the context
- **A** accept (a less than ideal answer which should be marked correct)
- **I** ignore (mark as if this material were not present)
- **R** reject
- ecf credit a correct statement that follows a previous wrong response
- ora or reverse argument
- owtte or words to that effect (accept other ways of expressing the same idea)

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Question	Answer	Marks	Guidance
1(a)	pipette; burette;	1 1	I: dropper R: teat pipette
1(b)	named indicator;	1	I: references to indicator paper R: Universal Indicator
1(c)	all volumes correct: 16.3, 16.9, 16.2, 16.1 4 correct = 2 3 correct = 1 2 or fewer correct = 0	2	
1(d)(i)	neutralisation / acid-base reaction / exothermic;	1	
1(d)(ii)	(indicator) changed colour;	1	A: incorrect colour changes
1(e)(i)	Experiment 2 / the second one / 16.9;	1	ecf on (c)
1(e)(ii)	measuring or recording error / overshot end-point / manual error with burette;	1	A: incorrect volume of sodium hydroxide used I: human error
1(e)(iii)	16.2; cm ³ ;	1 1	ecf on (c)
1(f)	hydrochloric acid; less volume used than sodium hydroxide;	1 1	

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Question	Answer	Marks	Guidance
2(a)	chromatography;	1	
2(b)	(teat) pipette/capillary tube;	1	A: dropper/glass rod
2(c)	water/organic solvent;	1	
2(d)	compound Q is insoluble;	1	R: it reacts with the solvent
2(e)	between (4.7 and 5.1) divided by (6.2 or 6.3); answer: between 0.74 and 0.82;	1 1	correct answer with no working scores 2

Question	Answer	Marks	Guidance
3(a)	all temperatures correctly recorded: 23, 36, 47, 58, 70, 79 6 correct = 3 5 correct = 2 4 correct = 1 3 or fewer correct = 0	3	
3(b)	all points correctly plotted: 23, 36, 47, 58, 70, 79 6 correct = 2 5 correct = 1 4 correct = 0 smooth curve;	2 1	
3(c)	third point/at 47 °C or 99 s; not on smooth line/curve;	1 1	
3(d)	118; seconds/sec/s; indication on the graph;	1 1 1	
3(e)(i)	(it) increases/higher the temperature faster reaction;	1	I: references to time (rather than rate)

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Question	Answer	Marks	Guidance
3(e)(ii)	particles have more energy / move faster; more (chance of / successful) collisions;	1 1	
3(f)(i)	slower reaction / longer time; smaller surface area;	1 1	
3(f)(ii)	sketch above the curve not touching the original at any point;	1	A: curve above but touching the anomalous point
3(g)	to prevent escape of / splash of acid; to allow carbon dioxide / gas to escape;	1 1	R: prevent spillages

Question	Answer	Marks	Guidance
4	<i>tests on ethene</i> bromine (water); turns colourless; <i>ammonia</i> red litmus / pH paper; turns blue / pH > 7; <i>oxygen</i> glowing splint; relights;	1 1 1 1 1 1	A: Allow any test which gives only a unique detectable result for that substance, e.g. lighted splint / ethene burns. R: relights a lighted splint A: lighted splint glows brighter

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Question	Answer	Marks	Guidance
5(c)	copper; chloride;	1 1	I: any reference to copper's oxidation state
5(d)	colourless;	1	R: white / pale yellow
5(e)(i)	white; precipitate ; insoluble / no change / no reaction ;	1 1 1	R: colourless
5(e)(ii)	no precipitate / slight white precipitate; no change / no reaction;	1 1	
5(e)(iii)	yellow; precipitate;	1 1	

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Question	Answer	Marks	Guidance
6	Method 1: Monitoring the reaction of the metal with acid 6 from: - named acid; - same or stated volume of (same concentration of) acid; - fair test idea, i.e. same surface area / size / mass / amount metal; - measure volume of gas / count bubbles / temperature change / observe complete reaction; - suitable reference to time; - conclusion / comparison, e.g. most effervescence = most reactive; Method 2: Displacement reaction 6 from: - react each metal; - with named acid; - to prepare salt solution of each; - react each metal with each solution of salt; - observe if displacement occurs; - conclusion / comparison;	6	I: use of heat unless this is identified as the output variable for the experiment