



Cambridge International Examinations
Cambridge International General Certificate of Secondary Education

CHEMISTRY

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Paper 6 Alternative to Practical

May/June 2017

MARK SCHEME

Maximum Mark: 40

Published

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This document consists of **4** printed pages.

Question	Answer	Marks
1(a)	measuring cylinder	1
	conical flask	1
1(b)	bubbles / fizz / effervescence	1
1(c)	time (taken)	1
	s / seconds / secs	1
1(d)(i)	80 and 40 (cm ³)	1
	Experiment 1 at twice / double the volume of Experiment 2	1
1(d)(ii)	two times as much / mass / amount / length magnesium used (in Experiment 1)	1
1(d)(iii)	curve drawn is steeper than Experiment 1	1
	curve drawn finishes at the same level as Experiment 1	1

Question	Answer	Marks
2(a)	initial volume completed correctly: 0.0 final volume completed correctly: 13.0	1
	difference: 13.0	1
2(b)	final volume, initial volume and difference completed correctly: 41.1, 2.1 and 39.0	1
	all readings in (a) and (b) to 1 d.p.	1
2(c)	there is a colour change at the end-point already	1
2(d)(i)	solution C	1
	a greater volume of potassium manganate(VII) / solution A was needed	1

Question	Answer	Marks
2(d)(ii)	3 × as concentrated	1
2(e)(i)	double the volume of solution C was used / double the volume of solution A was needed	1
	78 cm ³	1
2(e)(ii)	problem: volume of potassium manganate(VII) solution added would be greater than 50 cm ³	1
	solution: use more than one burette / refill burette	1
2(f)	advantage: easy (to use) / quick	1
	disadvantage: not accurate	1
2(g)	can take average or mean / can spot anomalies / more reliable	1

Question	Answer	Marks
3(a)	initial temperature and final temperature recorded correctly: 19, 23	1
	temperature difference correctly calculated: 4	1
3(b)	endothermic	1
3(c)	sulfur dioxide	1
3(d)	sodium / Na ⁺	1
	sulfite / SO ₃ ²⁻	1
3(e)	red	1
3(f)	white	1
	precipitate	1

Question	Answer	Marks
4		6
	the filtration method any 6 from: - weigh mixture (of calcium carbonate and kaolinite) - add (dilute) hydrochloric acid - in excess / continue adding until there is no more fizzing / add until no more gas is evolved - filter - wash residue / kaolinite - dry - weigh residue / kaolinite $(\text{change in mass} / \text{initial mass}) \times 100 (\%)$	
	the gas collection / loss of mass method any 6 from: - weigh mixture (of calcium carbonate and kaolinite) - add (dilute) hydrochloric acid - in excess / continue adding until there is no more fizzing / add until no more gas is evolved - collect gas in a syringe / measure final total mass - measure volume of gas / mass loss - calculate moles of $\text{CaCO}_3 / \text{CO}_2$ - calculate mass of CaCO_3 $(\text{mass of } \text{CaCO}_3 / \text{initial mass}) \times 100 (\%)$	
	the calcium chloride method any 4 from: - weigh mixture (of calcium carbonate and kaolinite) - add (dilute) hydrochloric acid - in excess / continue adding until there is no more fizzing / add until no more gas is evolved - filter	1