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**CHEMISTRY**

**0620/62**

Paper 6 Alternative to Practical

**May/June 2017**

MARK SCHEME

Maximum Mark: 40

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**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 <sup>3</sup> )	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 <b>C</b>	1
	a greater volume of potassium manganate(VII) / solution <b>A</b> was needed	1

Question	Answer	Marks
2(d)(ii)	3 × as concentrated	1
2(e)(i)	double the volume of solution <b>C</b> was used / double the volume of solution <b>A</b> was needed	1
	78 cm <sup>3</sup>	1
2(e)(ii)	problem: volume of potassium manganate(VII) solution added would be greater than 50 cm <sup>3</sup>	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 <sup>+</sup>	1
	sulfite / SO <sub>3</sub> <sup>2-</sup>	1
3(e)	red	1
3(f)	white	1
	precipitate	1

Question	Answer	Marks
4	<p><b>the filtration method</b> any 6 from:</p> <ul style="list-style-type: none"> <li>• weigh mixture (of calcium carbonate and kaolinite)</li> <li>• add (dilute) hydrochloric acid</li> <li>• in excess / continue adding until there is no more fizzing / add until no more gas is evolved</li> <li>• filter</li> <li>• wash residue / kaolinite</li> <li>• dry</li> <li>• weigh residue / kaolinite</li> <li>• <math>(\text{change in mass} / \text{initial mass}) \times 100 (\%)</math></li> </ul>	6
	<p><b>the gas collection / loss of mass method</b> any 6 from:</p> <ul style="list-style-type: none"> <li>• weigh mixture (of calcium carbonate and kaolinite)</li> <li>• add (dilute) hydrochloric acid</li> <li>• in excess / continue adding until there is no more fizzing / add until no more gas is evolved</li> <li>• collect gas in a syringe / measure final total mass</li> <li>• measure volume of gas / mass loss</li> <li>• calculate moles of <math>\text{CaCO}_3 / \text{CO}_2</math></li> <li>• calculate mass of <math>\text{CaCO}_3</math></li> <li>• <math>(\text{mass of CaCO}_3 / \text{initial mass}) \times 100 (\%)</math></li> </ul>	
	<p><b>the calcium chloride method</b> any 4 from:</p> <ul style="list-style-type: none"> <li>• weigh mixture (of calcium carbonate and kaolinite)</li> <li>• add (dilute) hydrochloric acid</li> <li>• in excess / continue adding until there is no more fizzing / add until no more gas is evolved</li> <li>• filter</li> </ul>	1