Cambridge
O Level

Cambridge International Examinations
Cambridge Ordinary Level

CHEMISTRY **5070/41**

Paper 4 Alternative to Practical **May/June 2016**

MARK SCHEME

Maximum Mark: 60

Published

This mark scheme is published as an aid to teachers and candidates, to indicate the requirements of the examination. It shows the basis on which Examiners were instructed to award marks. It does not indicate the details of the discussions that took place at an Examiners' meeting before marking began, which would have considered the acceptability of alternative answers.

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)	**C** (1) **E** (1) **B** (1) **D** (1)	**4**
1(b)(i)	**Y**	**1**
1(b)(ii)	**X**	**1**
1(b)(iii)	**Z**	**1**

Question	Answer	Marks
2(a)(i)	Red	**1**
2(a)(ii)	Universal Indicator / pH paper (1) pH meter (1)	**2**
2(a)(iii)	0 to 2	**1**
2(b)(i)	Effervescence / fizzing / bubbles	**1**
2(b)(ii)	Reaction with hydrochloric acid is faster (1) Hydrochloric acid is a strong acid, ethanoic acid is a weak acid (1)	**2**
2(c)(i)	Hydrogen (1) Pops in a flame/burning splint/lighted splint (1)	**2**
2(c)(ii)	$Mg + 2HCl \rightarrow MgCl_2 + H_2$	**1**

Question	Answer	Marks
3	**B**	**1**

Question	Answer	Marks
4	**D**	**1**

Question	Answer	Marks
5	**B**	**1**

Question	Answer	Marks
6	**B**	**1**

Question	Answer	Marks
7(a)	1.46 (g)	1
7(b)	Blue to colourless	1
7(c)	25.9 48.6 32.4 0.0 23.3 7.3 (3) 25.9 25.3 25.1 Mean titre = 25.2 cm^3 (1)	4
7(d)	0.00252	1
7(e)	0.00252	1
7(f)	0.0252	1
7(g)	0.05	1
7(h)	0.0248	1
7(i)	0.0124	1
7(j)	1.46 / 0.0124 = 118	1
7(k)	118 – 90 (1) **x** = 2 **y** = 4 (1)	2
7(l)	$C_2H_5OOCC_2H_4COOC_2H_5$	1

Question	Answer	Marks
8(a)	Colourless (solution)	1
8(b)	White precipitate (1) Soluble in excess/colourless solution (1)	2
8(c)	White precipitate (1) Insoluble in excess (1)	2
8(d)	(Dilute) nitric acid / HNO_3 (1) Silver Nitrate / $AgNO_3$ (1) Yellow precipitate (1)	3
8(e)	AlI_3	1
8(f)	Precipitate is soluble in excess	1

Question	Answer	Marks
9(a)	44, 64, 74, 80	1
9(b)	All points plotted correctly (1) Two curves through both sets of points (1 mark for each)	3
9(c)	Volume must be from candidate's graph e.g. 70 cm^3	1
9(d)	Use volumes from candidate's graph e.g. Exp 1: 40/45 = 0.89 (cm^3 / s) (1) Exp 2: 56/45 = 1.24 (cm^3 / s) (1)	2
9(e)	Catalyst (1) Increases the rate of the reaction (1)	2
9(f)	The reaction is complete or finished / all $KClO_3$ is used up	1
9(g)	2 × 122.5 g $KClO_3$ produces 3 × 24 000 cm^3 of O_2 (1) 84 (cm^3) are produced from 2 × 122.5 × 84 / 3 × 24 000 (1) = 0.286 (g) (1) **OR** Moles of O_2 produced = 84/24 000 Moles of $KClO_3$ = 2 × 84 /3 × 24 000 (1) Mass of $KClO_3$ = 2 × 84 × 122.5 / 3 × 24 000 (1) = 0.286 (g) (1)	3