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

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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**

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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**

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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 $3 \times 24\,000$ cm^3 of O_2 (1) 84 (cm^3) are produced from $2 \times 122.5 \times 84 / 3 \times 24\,000$ (1) = 0.286 (g) (1) **OR** Moles of O_2 produced = 84/24 000 Moles of $KClO_3$ = $2 \times 84 / 3 \times 24\,000$ (1) Mass of $KClO_3$ = $2 \times 84 \times 122.5 / 3 \times 24\,000$ (1) = 0.286 (g) (1)	**3**

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