



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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Page 2	Mark Scheme	Syllabus	Paper
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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)	$\text{Mg} + 2\text{HCl} \rightarrow \text{MgCl}_2 + \text{H}_2$	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

Page 3	Mark Scheme	Syllabus	Paper
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Question	Answer	Marks																
7(a)	1.46 (g)	1																
7(b)	Blue to colourless	1																
7(c)	<table style="margin-left: auto; margin-right: auto;"> <tr> <td style="padding: 0 10px;">25.9</td> <td style="padding: 0 10px;">48.6</td> <td style="padding: 0 10px;">32.4</td> <td></td> </tr> <tr> <td style="padding: 0 10px;">0.0</td> <td style="padding: 0 10px;">23.3</td> <td style="padding: 0 10px;">7.3</td> <td style="padding: 0 10px;">(3)</td> </tr> <tr> <td colspan="3" style="border-top: 1px solid black; border-bottom: 1px solid black;"></td> <td></td> </tr> <tr> <td style="padding: 0 10px;">25.9</td> <td style="padding: 0 10px;">25.3</td> <td style="padding: 0 10px;">25.1</td> <td></td> </tr> </table> Mean titre = 25.2 cm ³ (1)	25.9	48.6	32.4		0.0	23.3	7.3	(3)					25.9	25.3	25.1		4
25.9	48.6	32.4																
0.0	23.3	7.3	(3)															
25.9	25.3	25.1																
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 ₂ H ₅ OOCC ₂ H ₄ COOC ₂ H 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

Page 4	Mark Scheme	Syllabus	Paper
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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: $40/45 = 0.89 \text{ (cm}^3/\text{s)}$ (1) Exp 2: $56/45 = 1.24 \text{ (cm}^3/\text{s)}$ (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)	$2 \times 122.5 \text{ g KClO}_3$ produces $3 \times 24\,000 \text{ cm}^3$ of O_2 (1) $84 \text{ (cm}^3)$ are produced from $2 \times 122.5 \times 84 / 3 \times 24\,000$ (1) $= 0.286 \text{ (g)}$ (1) OR Moles of O_2 produced = $84/24\,000$ Moles of $\text{KClO}_3 = 2 \times 84 / 3 \times 24\,000$ (1) Mass of $\text{KClO}_3 = 2 \times 84 \times 122.5 / 3 \times 24\,000$ (1) $= 0.286 \text{ (g)}$ (1)	3