



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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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><tr><td>25.9</td><td>48.6</td><td>32.4</td><td></td></tr><tr><td>0.0</td><td>23.3</td><td>7.3</td><td>(3)</td></tr><tr><td colspan="4"> </td></tr><tr><td>25.9</td><td>25.3</td><td>25.1</td><td></td></tr><tr><td colspan="4"> </td></tr><tr><td colspan="4">Mean titre = 25.2 cm³ (1)</td></tr></table>	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
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)																										
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) $84 \text{ (cm}^3\text{)}$ 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