Cambridge O Level

Cambridge Assessment International Education
Cambridge Ordinary Level

CHEMISTRY **5070/42**

Paper 4 Advanced Practical **October/November 2019**

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.

Cambridge International will not enter into discussions about these mark schemes.

Cambridge International is publishing the mark schemes for the October/November 2019 series for most Cambridge IGCSE™, Cambridge International A and AS Level components and some Cambridge O Level components.

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Generic Marking Principles

These general marking principles must be applied by all examiners when marking candidate answers. They should be applied alongside the specific content of the mark scheme or generic level descriptors for a question. Each question paper and mark scheme will also comply with these marking principles.

GENERIC MARKING PRINCIPLE 1:

Marks must be awarded in line with:

- the specific content of the mark scheme or the generic level descriptors for the question
- the specific skills defined in the mark scheme or in the generic level descriptors for the question
- the standard of response required by a candidate as exemplified by the standardisation scripts.

GENERIC MARKING PRINCIPLE 2:

Marks awarded are always **whole marks** (not half marks, or other fractions).

GENERIC MARKING PRINCIPLE 3:

Marks must be awarded **positively**:

- marks are awarded for correct/valid answers, as defined in the mark scheme. However, credit is given for valid answers which go beyond the scope of the syllabus and mark scheme, referring to your Team Leader as appropriate
- marks are awarded when candidates clearly demonstrate what they know and can do
- marks are not deducted for errors
- marks are not deducted for omissions
- answers should only be judged on the quality of spelling, punctuation and grammar when these features are specifically assessed by the question as indicated by the mark scheme. The meaning, however, should be unambiguous.

GENERIC MARKING PRINCIPLE 4:

Rules must be applied consistently e.g. in situations where candidates have not followed instructions or in the application of generic level descriptors.

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GENERIC MARKING PRINCIPLE 5: Marks should be awarded using the full range of marks defined in the mark scheme for the question (however; the use of the full mark range may be limited according to the quality of the candidate responses seen).
GENERIC MARKING PRINCIPLE 6: Marks awarded are based solely on the requirements as defined in the mark scheme. Marks should not be awarded with grade thresholds or grade descriptors in mind.

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Question	Answer	Marks
1(a)	gas jar	**1**
1(b)	**Y** and **Z**	**1**
1(c)	**X**	**1**
1(d)(i)	**B** is more dense than air	**1**
1(d)(ii)	**B** is colourless therefore it is not possible to know when **D** is full	**1**

Question	Answer	Marks
2(a)	conical flask	**1**
2(b)	time + clock / watch	**1**
2(c)	carbon dioxide escapes	**1**
2(d)	concentration of hydrochloric acid(1) temperature(1)	**2**
2(e)(i)	steepest gradient or graph that levels off first (has greatest rate)	**1**
2(e)(ii)	3 2 1	**1**
2(e)(iii)	graph levels off / graph becomes horizontal	**1**
2(e)(iv)	all the (hydrochloric) acid has reacted or (hydrochloric) acid is used up	**1**

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Question	Answer	Marks
3	use of suitable apparatus in which to carry out the reaction (1) equal volumes of acid in both / equal amounts of acid in both / excess acid in both (1) measure masses of the two samples of solid (1) measure temperature / use thermometer (1) temperature increase means exothermic or sodium carbonate (1) temperature decrease means endothermic or sodium hydrogencarbonate (1) Reference to how the temperature changes are used to determine energy change per gram (1)	**7**

Question	Answer	Marks
4		**10**

	sodium hydroxide	excess sodium hydroxide	silver nitrate and nitric acid	aluminium and sodium hydroxide + heat
aqueous chromium nitrate	green ppt (1)	soluble (1)	no reaction (1)	ammonia (1) litmus blue (1)
aqueous iron(II) chloride	green ppt (1)	insoluble	white ppt	no reaction
aqueous iron(III) chloride	brown ppt (1)	insoluble (1)	white ppt (1)	no reaction (1)

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<table>
<tr><th>Question</th><th>Answer</th><th>Marks</th></tr>
<tr><td>5(a)</td><td>2.92 (g)</td><td>1</td></tr>
<tr><td>5(b)</td><td>make sure the remaining solution is transferred from the beaker to the volumetric flask</td><td>1</td></tr>
<tr><td>5(c)</td><td>volumetric flask / graduated flask / standard flask</td><td>1</td></tr>
<tr><td>5(d)</td><td>G</td><td>1</td></tr>
<tr><td>5(e)</td><td>Excess of potassium iodide and dilute sulfuric acid are used</td><td>1</td></tr>
<tr><td>5(f)</td><td>
<table>
<tr><td>1</td><td>2</td><td>3</td></tr>
<tr><td>22.6</td><td>46.8</td><td>32.8</td></tr>
<tr><td>0.0</td><td>23.6</td><td>10.2</td></tr>
<tr><td>22.6</td><td>23.2</td><td>22.6</td></tr>
<tr><td>✓</td><td></td><td>✓</td></tr>
</table>
(1) (1) (1)

titre……22.6 cm^3 (1)</td><td>4</td></tr>
<tr><td>5(g)</td><td>0.00226 / 2.26×10^{-3}</td><td>1</td></tr>
<tr><td>5(h)</td><td>0.00113 / 1.13×10^{-3}</td><td>1</td></tr>
<tr><td>5(i)</td><td>0.000377 / 3.77×10^{-4}</td><td>1</td></tr>
<tr><td>5(j)</td><td>0.00753 / 7.53×10^{-3}</td><td>1</td></tr>
</table>

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Question	Answer	Marks
5(k)	214	**1**
5(l)	1.61	**1**
5(m)	55.2(%)	**1**

Question	Answer	Marks
6(a)	oxygen (1) glowing splint relights(1)	**2**
6(b)(i)	wash with water and dry	**1**
6(b)(ii)	mass of cathode at the start	**1**
6(c)(i)	all eight points correctly plotted (1) straight line of best fit for the first five points (1) ruled line through last three points(1) two straight lines intersect (1)	**4**
6(c)(ii)	Circle around fourth point from the table	**1**
6(d)(i)	14.3 (minutes)	**1**
6(d)(ii)	21.5 (minutes)	**1**
6(e)	blue (1) colourless (1)	**2**

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