CAMBRIDGE
International Education

Cambridge IGCSE™

CHEMISTRY **0620/52**

Paper 5 Practical Test **May/June 2026**

MARK SCHEME

Maximum Mark: 40

Published

This mark scheme contains the instructions and marking guidance that our examiners used to mark candidate responses for this component.

Before they start marking, examiners complete a standardisation process. They review a range of candidate responses and discuss the mark scheme in detail to agree which answers can and cannot be accepted. Examiners award marks where it is clear that candidate responses have met the requirements of the mark scheme. These requirements may vary between different components or different versions of the same component, depending on the exact requirements of the question and the candidate responses seen during the standardisation process.

Sometimes, our mark schemes may allow marks to be awarded to responses which contain elements that are factually incorrect or for content not covered by the syllabus. We do this in response to the demands of a specific question to support candidates and make sure that our assessments are fair. However, these allowances should not be used as a guide for teaching and learning.

We cannot discuss the mark scheme with schools, and we recommend that schools read the mark scheme together with the assessment material and the Principal Examiner Report for Teachers.

This document consists of **16** printed pages.

General marking principles

All examiners must apply these marking principles when marking candidate responses.

1	Examiners must award marks for each response in line with: • the specific **content** defined in the mark scheme • the specific **skills** defined in the mark scheme or in the level descriptions • the **standard of response** required as exemplified by the standardisation scripts.
2	Examiners must award **whole marks** (not half marks, or other fractions).
3	Examiners must award marks **positively**. This means that: • marks are not deducted for errors or omissions • marks are awarded for correct / valid answers as defined in the mark scheme and also for **other valid answers** which go beyond the scope of the syllabus and mark scheme referring to your team leader as appropriate • the quality of spelling, punctuation and grammar are judged **only** when the mark scheme indicates that these features are **specifically assessed** in the question. However, the meaning of all responses must be unambiguous.
4	Examiners must **consistently** apply the requirements of the mark scheme and any rules for what to do when candidates have not followed instructions correctly.
5	Examiners must use the **full range of marks** defined in the mark scheme, unless limited by the quality of the candidate responses seen.
6	Examiners must award marks according to the mark scheme and **must not** award marks with grade thresholds or grade descriptions in mind.

Science-Specific Marking Principles

1	Examiners should consider the context and scientific use of any keywords when awarding marks. Although keywords may be present, marks should not be awarded if the keywords are used incorrectly.
2	The examiner should not choose between contradictory statements given in the same question part, and credit should not be awarded for any correct statement that is contradicted within the same question part. Wrong science that is irrelevant to the question should be ignored.
3	Although spellings do not have to be correct, spellings of syllabus terms must allow for clear and unambiguous separation from other syllabus terms with which they may be confused (e.g. ethane / ethene, glucagon / glycogen, refraction / reflection).
4	The error carried forward (ecf) principle should be applied, where appropriate. If an incorrect answer is subsequently used in a scientifically correct way, the candidate should be awarded these subsequent marking points. Further guidance will be included in the mark scheme where necessary and any exceptions to this general principle will be noted.
5	<u>‘List rule’ guidance</u> For questions that require ***n*** responses (e.g. State **two** reasons …): • The response should be read as continuous prose, even when numbered answer spaces are provided. • Any response marked *ignore* in the mark scheme should not count towards ***n***. • Incorrect responses should not be awarded credit but will still count towards ***n***. • Read the entire response to check for any responses that contradict those that would otherwise be credited. Credit should **not** be awarded for any responses that are contradicted within the rest of the response. Where two responses contradict one another, this should be treated as a single incorrect response. • Non-contradictory responses after the first ***n*** responses may be ignored even if they include incorrect science.

6 <u>Calculation specific guidance</u>

Correct answers to calculations should be given full credit even if there is no working or incorrect working, **unless** the question states ‘show your working’.

For questions in which the number of significant figures required is not stated, credit should be awarded for correct answers when rounded by the examiner to the number of significant figures given in the mark scheme. This may not apply to measured values.

For answers given in standard form (e.g. a ´ 10^{n}) in which the convention of restricting the value of the coefficient (a) to a value between 1 and 10 is not followed, credit may still be awarded if the answer can be converted to the answer given in the mark scheme.

Unless a separate mark is given for a unit, a missing or incorrect unit will normally mean that the final calculation mark is not awarded. Exceptions to this general principle will be noted in the mark scheme.

7 <u>Guidance for chemical equations</u>

Multiples / fractions of coefficients used in chemical equations are acceptable unless stated otherwise in the mark scheme.

State symbols given in an equation should be ignored unless asked for in the question or stated otherwise in the mark scheme.

Annotations guidance for centres

Examiners use a system of annotations as a shorthand for communicating their marking decisions to one another. Examiners are trained during the standardisation process on how and when to use annotations. The purpose of annotations is to inform the standardisation and monitoring processes and guide the supervising examiners when they are checking the work of examiners within their team. The meaning of annotations and how they are used is specific to each component and is understood by all examiners who mark the component.

We publish annotations in our mark schemes to help centres understand the annotations they may see on copies of scripts. Note that there may not be a direct correlation between the number of annotations on a script and the mark awarded. Similarly, the use of an annotation may not be an indication of the quality of the response.

The annotations listed below were available to examiners marking this component in this series.

Annotations

Annotation	Meaning
^	information missing or insufficient for credit
BOD	benefit of doubt given
CON	contradiction in response, mark not awarded
✗	incorrect point or mark not awarded
ECF	error carried forward applied
I	incorrect or insufficient response, mark not awarded
NBOD	benefit of doubt was considered, but the response was decided to not be sufficiently close for benefit of doubt to be applied
R	incorrect point or mark not awarded
SEEN	blank page seen
✓	correct point of mark awarded

Mark Scheme Abbreviations – may be used in the mark scheme that follows	
;	separates marking points
/	alternative responses for the same marking point
R	reject the response
A	allow/accept the response
I	ignore the response
CON	contradiction in response, no mark
ecf	error carried forward
ora	or reverse argument
AW	alternative wording
underline or **bold**	actual word given must be used by candidate (grammatical variants excepted)
( )	the word / phrase in brackets is not required but sets the context
max	indicates the maximum number of marks that can be given
MP / M	marking point

Question	Answer	Marks	Guidance
1(a)(i)	**M1** all five volumes of dilute ethanoic acid recorded as 10.0 and all volumes of water are recorded as whole numbers only	**1**	must be to 1 dp for volume of acid
1(a)(ii)	**M2** all five volumes of distilled water are correct (100, 90, 80, 70, 60)	**1**	**ignore** trailing zeros
1(a)(iii)	**M3** five volumes of gas recorded and all volumes are greater than zero	**1**	
1(a)(iv)	**M4** volume in Experiment 5 is larger than volume in Experiment 1	**1**	
1b(i)	**M1** *y*-axis scale in linear and points extend above half way up the grid	**1**	
1(b)(ii)	**M2 and M3** All points plotted correctly	**2**	All five corrects scores 2, any four correct scores 1. If scale non-linear then no marks awarded for plotting of points in non-linear section. Half small square tolerance.
1(b)(iv)	**M4** best fit line	**1**	Must ignore anomalous points. **Allow** curves or straight lines, whichever fits their points. **Reject** multiple lines, dot to dot curves and sigmoidal lines.
1(c)(i)	**M1** correct evaluation of volume of gas in experiment 3 ÷ 75	**1**	rounding must be correct allow 2 sig figs or more, ignore missing trailing zeros.
1(c)(ii)	**M2** $cm^{3/}s$	**1**	**Allow** $cm^3\ s^{-1}$ **Allow** alternatives for cm^3 such as 'ml' or 'cc' **Allow** secs / sec / seconds for s **Allow** units written as a fraction

Question	Answer	Marks	Guidance
1(c)(iii)	5	**1**	**Allow** the last one / 60 of water ecf on results if answer given is not 5
1(d)(i)	**M1** working shown on graph – construction from 77 on *x*-axis to line and from line to *y*-axis	**1**	minimum is a mark on the line or marks on BOTH axes
1(d)(ii)	**M2** correct value	**1**	half small square tolerance. Allow ecf from incorrect volume on graph line but no ecf if working to random point on grid and not on the line.
1(d)(iii)	**M3** units given as cm^3	**1**	Allow ml or cc
1(e)	(10 cm^3 measuring cylinder is more) accurate	**1**	**Allow** precise / accuracy / (more) exact **Ignore** faster etc
1(e)(i)	**M1** advantage: (more) accurate	**1**	If comparison is made, then it must **not** be to 50 cm^3 measuring cylinder **Allow** accurate / (more) precise / (more) exact **Ignore** comments of speed / ease of use / adding dropwise **Ignore** comments on fixed volumes
1(f)	(volume of gas is) smaller	**1**	**Allow** less / small / decreases **Allow** more if answer makes it clear that they are referring to when gas does not escape **Reject** comments on rate of reaction changing **Ignore** comments on time taken and accuracy
1(f)(i)	**M1** experiment 5	**1**	**Allow** ecf from **Table 2.1**

Question	Answer	Marks	Guidance
1(f)(ii)	**M2** fast(er) / makes gas (more) quickly	1	**M2 is only awarded if M1 is correct** **Allow** more gas <u>made / produced / formed</u> before stopper is put back **M2** must relate to rate / speed of gas production **Ignore** makes most gas without reference to first few / 75 seconds / set time **Ignore** references to highest concentration
1(g)	sketched line is at a higher volume (above) than the plotted line and does not meet plotted line at any point.	1	Does not need to be the same shape as the plotted line. No minimum range required

Question	Answer	Marks	Guidance
2(a)	lilac (flame)	1	**Allow** pink / purple check supervisor's. **Allow** lilac or any colour seen on supervisor results, treat orange as equivalent to yellow
2(b)(i)	**M1** condensation (at top of tube) / steam (given off)	1	**Allow** a description of condensation or of steam
2(b)(ii)	**M2** (solid) melts / (solid) becomes liquid / (solid) dissolves **OR** (solid) becomes black / green	1	
2(c)(i)	**M1** green precipitate	1	**Allow** any green **Allow** ppt / ppte **Ignore** solid
2(c)(ii)	**M2** (precipitate) dissolves / (precipitate) disappears / green solution in excess	1	to score **M2** there must be some indication of a solid having formed (such as ppt, cloudy etc.) 'soluble green ppt' scores **M1 and M2** as long as not contradicted elsewhere The must be some indication of a solid formed in the first place to score M2 **Reject** any incorrect additional observations such as turns brown or fizzes
2(c)(iii)	white precipitate	1	**Allow** ppt / ppte **Ignore** solid **Reject** any incorrect additional observations
2(d)(i)	**M1** chromium (III) / Cr^{3+}	1	the name takes precedence over any formula **[2]** incorrect formula but containing at least two correct ions

Question	Answer	Marks	Guidance
2(d)(ii)	**M2** potassium / K^+	**1**	**Allow** missing oxidation state **Reject** incorrect oxidation state M2 ecf on flame colour in **2(a) IF** mark was awarded in **2(a)**
2(d)(iii)	**M3** sulfate / SO_4^{2-}	**1**	**[1]** incorrect formula containing one correct ion **[0]** Cr (not part of a formula) SO_4 (not part of a formula) K (not part of a formula) **Reject** any incorrect additional ions
2(e)	no change / no reaction / no precipitate	**1**	**Allow** no observations / nothing happens / colourless (solution) **Ignore** comments about ammonia produced or tests for ammonia **Reject** any answer that implies a change, such as 'becomes colourless' or 'fizzing'
2(f)	red litmus turns blue	**1**	**Ignore** and additional negative gas tests and fizzing **Reject** any additional positive gas tests
2(g)	cream precipitate	**1**	Check supervisor observations allow white or yellow if that matches supervisor **Allow** ppt / ppte **Ignore** solid **Reject** any incorrect additional observations
2(h)(i)	**M1** ammoni<u>um</u> / NH_4^+	**1**	the name takes precedence over an incorrect formula **Reject** any incorrect additional ions or bromine

Question	Answer	Marks	Guidance
2(h)(ii)	**M2** bromide / Br^-	1	M2 ecf on ppt colour in **2(f)**. If two colours given in **2(f)** (such as cream-white) then **BOTH** halide ions are required for **M2** **[1]** incorrect formula but containing at least one correct ion e.g. FeBr = [1] e.g. NH_4SO_4 = [1] e.g. NH_4Br_2 = [1] **[0]** NH_4 (not part of a formula) Br (not part of a formula)

Question	Answer	Marks	Guidance
3	**reduction of solid method** Any 6 from: **MP1** crush / grind ore / break into smaller pieces / powder **MP2** using a suitable method e.g. pestle and / or mortar, hammer **MP3** add more reactive element / reducing agent **MP4** carbon / coke / iron / zinc / aluminium / magnesium / CO / hydrogen specified **MP5** heat **MP6** In a suitable container (e.g. crucible, evaporating basin) **MP7** tin displaced / reduced / displacement reaction to make tin **displacement from solution method** Any 6 from: **MP1** crush / grind ore / break into smaller pieces / powder **MP2** using a suitable method e.g. pestle and / or mortar, hammer **MP3** add a (dilute) acid Max 6	6	**Ignore** irrelevant washings, dryings, weighing, crystallisation, evaporation, effervescence etc **Allow** methods starting with tin oxide, **Reject** methods starting with tin, **Ignore** other tin compounds **MP4** does not subsume MP3 **Allow** correct equation **Ignore** replaced for displaced **Allow** MPs 3 and 4 for 'dil HCl' etc but **Reject** concentrated acids

Question	Answer	Marks	Guidance
3	**MP4** suitable strong acid named (e.g. HCl, H_2SO_4, HNO_3) **MP5** add metal more reactive than tin **MP6** name of metal added specified (e.g. iron, zinc, magnesium) **MP7** tin displaced / tin reduced / displacement reaction to make tin **electrolysis of solution method** Any 6 from: **MP1** crush / grind ore / break into smaller pieces / powder **MP2** using a suitable method e.g. pestle and / or mortar, hammer **MP3** add a (dilute) acid **MP4** suitable strong acid named (e.g. HCl, H_2SO_4, HNO_3) **MP5** electrolysis (of solution) **MP6** specified inert material for electrodes (e.g. carbon, platinum) **MP7** tin obtained at the negative electrode / cathode		**Ignore** weak acids, e.g. ethanoic (MP 3 awarded but not 4) A named more reactive metal does **not** subsume MP5 **Reject** Ca and above. **Allow** correct equation **Ignore** replaced for displaced **Allow** MPs 3 and 4 for 'dil HC*l*' etc but **Reject** concentrated acids **Ignore** weak acids, e.g. ethanoic (MP 3 awarded but not 4) **Allow** description of electrolysis **Allow** correct cathode half equation **Allow** correct equation **Ignore** replaced for displaced

Question	Answer	Marks	Guidance
3	**electrolysis of molten ore/oxide** Any 6 from: **MP1** crush / grind ore / break into smaller pieces / powder **MP2** using a suitable method e.g. pestle and / or mortar, hammer **MP3** heat ore / oxide **MP4** until molten **MP5** electrolysis **MP6** specified inert material for electrodes (e.g. carbon, platinum) **MP7** tin obtained at the negative electrode/cathode		**Allow** description of electrolysis **Allow** correct cathode half equation

<table>
<tr><th></th><th>reduction of solid</th><th>displacement from solution</th><th>electrolysis of solution</th><th>electrolysis of molten</th></tr>
<tr><td>MP1</td><td colspan="4">crush / grind ore / break into smaller pieces / powder</td></tr>
<tr><td>MP2</td><td colspan="4">using a suitable method e.g. pestle and / or mortar, hammer</td></tr>
<tr><td>MP3</td><td>add more reactive element / reducing agent</td><td colspan="2">add (dilute) acid</td><td>heat ore / oxide</td></tr>
<tr><td>MP4</td><td>identified as carbon /coke /iron / zinc / aluminium / magnesium / hydrogen/carbon monoxide</td><td colspan="2">suitable strong acid named</td><td>until molten</td></tr>
<tr><td>MP5</td><td>heat</td><td>add more reactive metal</td><td colspan="2">electrolysis</td></tr>
<tr><td>MP6</td><td>in crucible / evaporating basin</td><td>suitable more reactive metal identified (up to Mg in reactivity)
does not subsume MP5</td><td colspan="2">specified inert material for electrodes (e.g. carbon, platinum)</td></tr>
<tr><td>MP7</td><td colspan="2">tin displaced / reduced / displacement reaction to make tin / correct equation</td><td colspan="2">tin forms at cathode / cathode half equation</td></tr>
</table>