CAMBRIDGE
International Education

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CHEMISTRY **0620/53**

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.

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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.

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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.

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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. $a \times 10^n$) 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.

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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

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Question	Answer	Marks	Guidance
1(a)	**M1** all masses of sodium thiosulfate completed correctly	**1**	ignore trailing zeros (i.e. allow 9 for 9.0 etc.)
	M2 all 10 temperatures recorded	**1**	
	M3 all temperature changes calculated correctly	**1**	
	M4 temperature change increases down the table	**1**	**Allow** if 2 consecutive temperatures are the same **Reject** if > 2 temperatures are the same **Reject** if temperature change decreases down the table
	M5 all masses shown to 1 decimal place and all temperatures recorded to the nearest 0.5	**1**	
1(b)	**M1** appropriate vertical scale so that points take up > half space	**1**	There must be a total of 4 ✓ and ×, for this question
	M2 and **M3** all points plotted correctly	**2**	All five corrects scores ✓✓ any four correct scores 1 × ✓ If scale non-linear then no marks awarded for plotting in the non-linear section. circle any incorrectly plotted points put × ✓ or × × to top right of grid Half small square tolerance.
	M4 line of best fit	**1**	**Ignore** any line to the left of 1.0 g and to the right of 5.0 g **Reject** multiple lines (daylight visible between lines), dot to dot lines, feathery lines, very think lines, very wobbly lines

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Question	Answer	Marks	Guidance
1(c)	**M1** extrapolation of graph to 5.7 g	**1**	**Allow** smooth continuation of plotted line **Reject** a straight line becoming a curve
	M2 working on graph from 6 g to extension line	**1**	**Allow** as a minimum a mark at 5.7 g on extrapolation **Allow** a mark on x-axis at 5.7 g AND a corresponding mark on the y-axis Half small square tolerance.
	M3 correct value	**1**	**Allow** ecf from incorrect mass on graph line no ecf if working to random point on grid and not on the line. if no extrapolation M3 only for a correct reading at 5.7 g if they had extrapolated the line.
1(d)	to increase the rate of dissolving	**1**	**Allow** to increase the rate of reaction **Allow** to speed up the reaction **Allow** so its faster **Ignore** to increase the surface area / to decrease the particle size **Ignore** dissolving properly
1(e)	(more) accurate	**1**	**Allow** (more) precise / (more) exact **Allow** accuracy / precision **Ignore** faster / slower addition **Ignore** has a smaller scale

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Question	Answer	Marks	Guidance
1(f)	endothermic AND the temperature decreases	1	**ECF from results** **Allow** temperature decreases are positive **Allow** temperature of surroundings decrease **Allow** temperature at the end is lower **Allow** temperature of the products is less than that of the reactants **Reject** temperature changes are positive **Ignore** comments about heat lost / gained (from surroundings) – the answer must use the data in Table 2.1 which shows a temperature decrease **Ignore** comments on trends in temperature decrease. So 'endothermic because the temperature decrease decreases as the volume gets larger' scores the mark as it is endothermic and there is a temperature decrease Ignore quoted values
1(g)	so energy is not taken in from the surroundings	1	**Allow** so energy isn't transferred **Allow** so energy isn't lost to the surrounding **Allow** so heat isn't lost **Allow** reduces heat gain / reduces heat loss / reduces heat transfer **Allow** it dissipates heat if there is no lid **Ignore** to stop gases leaving / so it's a closed system **Reject** to keep temperature constant
1(h)	measuring a temperature change	1	**Allow** the initial temp is being used to calculate a temperature change (so it does not affect the results) **Allow** any response that refers to a temperature change **Ignore** the initial temperature will not affect the end result
1(i)	20 × 4.18 × their answer to experiment 3	1	**Ignore** sign **Allow** answer to 3 sf or more and ignore missing trailing zeros. **Allow** correct rounding

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Question	Answer	Marks	Guidance
2(a)	orange-red	1	**Allow** brick red **Reject** red alone **Reject** orange alone **ECF** on supervisor results
2(b)(i)	White precipitate	1	**Allow** ppt / ppte **Ignore** solid **Reject** additional incorrect observations
2(b)(ii)	**M1** white precipitate	1	**Insoluble white precipitate** ✓✓ **Allow** ppt / ppte **Ignore** solid
	M2 insoluble white precipitate	1	M2 **Allow** white precipitate remains / no change (if ppte awarded on M1) **Reject** additional incorrect observations
2(b)(iii)	White precipitate	1	**Allow** ppt / ppte **Ignore** solid **Reject** additional incorrect observations
2(b)(iv)	Effervescence		**Allow** bubbling / fizzing **Reject** additional incorrect observations
2(c)	**M1** calcium **M2** chloride	1	the name takes precedence over any formula incorrect formula but containing at least one correct ion e.g. CaSO4= [1] e.g. $ZnCl_2$ = [1] Ca (not part of a formula) = 0 Cl (not part of a formula) = 0 **M2 Reject** chlorine / chlorine ions

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Question	Answer	Marks	Guidance
2(d)(i)	**M1** white precipitate **M2** soluble	1	soluble white ppte ✓✓ **Allow** ppte / ppt **Ignore** solid **Allow** colourless solution forms for M2 to be awarded there must be some indication that a soild forms
2(d)(ii)	**M1** effervescence	1	**Allow** bubbling / fizzing
	M2 (dark) grey (solid)	1	**Allow** black (solid) **Ignore** solid dissolves **Ignore** colourless solution **Reject** light grey solid made **Reject** any colour of solution
2(d)(iii)	**M1** white precipitate	1	**Allow** ppt / ppte **Ignore** solid **Reject** additional incorrect observations
2(d)(iv)	No change	1	**Allow** remains colourless / no observation / no reaction / nothing happens
2(e)	**M1** zinc **M2** sulfate	2	**M1 Allow** aluminium the name takes precedence over any formula incorrect formula but containing at least one correct ion e.g. $AlSO_4$ = [1] e.g. $ZnNO_3$ = [1] Zn (not part of a formula) = 0 SO_4 (not part of a formula) = 0

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Question	Answer	Marks	Guidance
3	any 6 from: **MP1** known / stated / same mass of leaves **MP2** grind / crush with water **MP3** known / set volume of leaf solution / (oxalic) acid or manganate (aliquote) **MP4** use of flask / beaker appropriate for manganate (VII) / acid reaction **MP5** add one reagent to other until colour changes **MP6** mix / swirl during addition **MP7** correct conclusion statement	**6**	 **M1 Ignore** amount **MP2** Allow crush leaves and add water **MP2 Ignore** filtering **MP2 Ignore** what the leaves are ground in **MP2 Ignore** addition of alcohol **MP3** Ignore amount **MP4 Allow** any suitable container for the experiment **MP4** Allow adding manganate to a leaf in a suitable container.

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	Method A titration with fixed volume of acid from leaves	**Method B titration with fixed volume of manganate**	**Method C Add together and time to decolourise**	**Method D Add together and leave for set time and see which has decolourised**
MP1	Known mass of leaves	Known mass of leaves	Known mass of leaves	Known mass of leaves
MP2	Crush leaves with water or Crush leaves and add water	Crush leaves with water or Crush leaves and add water	Crush leaves with water or Crush leaves and add water	Crush leaves with water or Crush leaves and add water
MP3	use of flask / beaker appropriate for manganate (VII) / acid reaction	use of flask / beaker appropriate for manganate (VII) / acid reaction	use of flask / beaker appropriate for manganate (VII) / acid reaction	use of flask / beaker appropriate for manganate (VII) / acid reaction
MP4	Known volume acid	Known volume manganate	Known volume manganate	Known volume manganate
MP5	Add manganate to acid until there is a colour change (and note the volume)	Add acid to manganate until there is a colour change (and note the volume)	Add manganate to acid time how long it takes to decolourise	Add manganate to acid and leave for a set time
MP6	mixing / swirling	mixing / swirling	Mix / swirl	Mix / swirl
MP7	the acid / leaf that needs most manganate is most concentrated	the acid / leaf with smallest volume is most concentrated	the one that takes the shortest time to decolourise is the most concentrated	the one that decolourises the most is the most concentrated

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