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CAMBRIDGE
International Education

Cambridge IGCSE™

COMBINED SCIENCE **0653/62**

Paper 6 Alternative to Practical **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	'List rule' guidance 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 Calculation specific guidance

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 Guidance for chemical equations

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
	correct point or mark awarded
	incorrect point or mark not awarded
	correct awarding one mark from marking point or marking group 1 similar numbered ticks are used for marking point or marking groups 2, 3, 4 and 5
	information missing or insufficient for credit
	incorrect or insufficient point ignored while marking the rest of the response
	contradiction in response, mark not awarded
	benefit of the doubt given
	error carried forward applied
	response is too vague or there is insufficient detail in response
	incorrect point or mark not awarded

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Annotation	Meaning
SEEN	point has been noted, but no credit has been given or blank page seen
	key point attempted / working towards marking point / incomplete answer / response seen but not credited / blank page seen
BP	blank page
	unclear response
LNK	two statements are linked
FT	follow through
IR	irrelevant material that does not answer the question

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Question	Answer	Marks	Guidance
1(a)(i)	size – approximate shape to match Figure 1.1, takes up more than half of the available space and fits inside box ; quality – continuous unbroken outer line ; suitable detail – 3 crescent shapes containing seeds ;	**3**	If in doubt, use ruler – minimum size = 60 mm in one direction at widest point **Note** diagram must not touch the sides **Allow** one discontinuity **Do not allow** shading / drawn with compasses or protractor
1(a)(ii)	64 ± 1 (mm) ;	**1**	**Allow** 6.4 ± 0.1 cm if unit replaced
1(a)(iii)	*D* correctly recorded to ± 1 (mm) and line shown on drawing ;	**1**	**Allow** *D* ± 0.1 cm if unit replaced **Allow** any diameter e.g. horizontal / diagonal
1(a)(iv)	magnification calculated ;	**1**	Correct rounding only Minimum 2 sig fig **Allow** 1 sig fig if answer is exact **Ignore** units
1(b)	colourless ;	**1**	**Allow** decolourises / no colour **Ignore** (becomes) clear

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Question	Answer	Marks	Guidance
2	***One marking point from each section and then any two others (if one section is missing max 6 etc).***	7	**Allow** red for ripe and green for unripe
	1 – apparatus vessel for Benedict's test: test-tube / boiling tube / beaker / flask ; apparatus for heating Benedicts: (hot) water-bath / beaker of <u>hot</u> water ; apparatus to extract juice: blender / knife / scalpel / pestle (and mortar) ;		**Allow** marks from a labelled diagram **Allow** Bunsen burner
	2 – method *method described clearly such that another student could use it to obtain suitable results* extract juice from a tomato, add Benedict's solution, heat and repeat with the other type of tomato ;		**Allow** any indication tomato skin has been broken
	3 – measurements and observations observe / look at / see / check / record initial colour AND final colour (of solution) ; measure <u>volume</u> of Benedict's ; measure <u>volume</u> of tomato juice / <u>mass</u> of tomato ; test 5 different unripe tomatoes **and** 5 different ripe tomatoes ;		**Ignore** observe colour change **Allow** marks from a table **Allow** stated masses / volumes <u>with units</u> **Allow** record for measure **Ignore** 5 samples from the same tomato
	4 – control variables same type of tomato ; same mass of tomato used / volume of juice used ; same volume of Benedict's ;		**Allow** 'amount' or 'quantity' in section 4 **Allow** 'size' of tomato **Allow** 'control' for constant
	5 – processing results if no (reducing) sugar is present / if tomato is unripe / negative result colour will be blue ; if (reducing) sugar is present / if tomato is ripe / positive result colour will be brick – red ;		**Ignore** any graphs **Allow** orange / red / green / yellow for brick red

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Question	Answer	Marks	Guidance
3(a)	M_1 = 13.24 ; M_3 = 14.49 ; M_6 = 14.05 ;	3	**Allow** one mark for all masses recorded correctly with one decimal place i.e. 13.2, 14.5, 14.0
3(b)	re–heat (and measure mass) and check mass is constant ;	1	**Allow** heat to constant mass **Ignore** heat for longer alone **Allow** add acid and check for fizzing / bubbles / effervescence **Ignore** gas produced / named gas / carbon dioxide
3(c)(i)	1.25 ;	1	**Allow ecf** from $M_3 – M_1$ **Allow** 1.242 (3 d.p. from readings in Figure 3.1) or 1.24 (from rounding this answer)
3(c)(ii)	0.81 ;	1	**Allow ecf** from $M_6 – M_1$ **Allow** 0.804 (3 d.p. from readings in Figure 3.1) 0.80 or 0.8 (from rounding this answer)
3(c)(iii)	64.8 ; 65 ;	2	**note** correct answer to two significant figures = 2 marks correct rounding only **Allow ecf** from **3(c)(i)** and **3(c)(ii)** **Allow** 64.7 if 0.804 and 1.242 in **3(c)(i)** and **3(c)(ii)** **Allow** 0.65 as final answer for one mark **Ignore** 0.648

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<table>
<tr><th>Question</th><th>Answer</th><th>Marks</th><th>Guidance</th></tr>
<tr><td>3(d)</td><td>stop test–tube getting coated with soot ;</td><td>1</td><td>Allow blue flame is hotter / has higher temperature (than a yellow flame) ORA
Allow a yellow flame is not hot enough to decompose the carbonate

assume ‘it’ means blue</td></tr>
<tr><td>3(e)</td><td><table><tr><th>test / reagents</th><th>observation / result</th></tr><tr><td>(dilute) nitric acid (+ zinc carbonate)</td><td>bubbles / fizzes / effervescence</td></tr><tr><td>(aqueous) ammonia (+ solution from step 8)</td><td>white precipitate forms colourless solution (in excess)</td></tr><tr><td>(aqueous) sodium hydroxide (+ solution from step 8)</td><td>white precipitate forms colourless solution (in excess)</td></tr></table>
table constructed with <u>two</u> columns with correct headings ;
each correct test linked to correct observations ;;;</td><td>4</td><td>Allow zinc nitrate for solution from step 8 in test column
Allow horizontal table
Allow heading ‘solutions’ for reagents

Ignore gas / carbon dioxide produced for nitric acid test only

Allow white precipitate is soluble / re–dissolves (in excess)
Allow solid for precipitate

Ignore column headed ‘steps’</td></tr>
</table>

<table>
<tr><th>Question</th><th>Answer</th><th>Marks</th><th>Guidance</th></tr>
<tr><td>4(a)(i)</td><td>4.0 (cm) ;</td><td>1</td><td>Allow 4.0 ± 0.1 cm
Allow 40 if unit mm is present</td></tr>
<tr><td>4(a)(ii)</td><td>40 ;</td><td>1</td><td>ecf 4(a)(i)</td></tr>
</table>

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Question	Answer	Marks	Guidance
4(a)(iii)	difficult to locate the centre of the rods / difficult to keep ruler horizontal / rods may not be parallel ;	1	**Allow** ruler size shorter than gap / ruler not long enough **Ignore** stands may not be vertical / ruler is not straight
4(a)(iv)	1600 ;	1	**ecf 4(a)(ii)** 39 → 1 521 or 1 500 41 → 1 681 or 1 700 38 → 1 444 or 1 400
4(b)	third box ticked ;	1	**Allow** any clear indication
4(c)(i)	11.0 and 11.2 ;	1	**Do not allow** 11 alone cao
4(c)(ii)	11.1 ;	1	**ecf** 1 d.p. only
4(c)(iii)	1.11 and 1.5 ;	1	**ecf** only consistent decimal places in columns
4(c)(iv)	one oscillation has too short a time to measure OWTTE ;	1	**Allow** answers in terms of human reaction time **Allow** one oscillation is too fast **Allow** reduce % error **Ignore** accuracy comments
4(d)(i)	vertical axis labelled T^4 in s^4 **AND** horizontal axis labelled D^2 in cm^2; suitable linear scales in both directions so that points occupy more than half the grid ; plots correct ± half a small square ;	3	**Allow M2 and M3** if axes are reversed **Do not allow** M2 or M3 if scale is non–linear or awkward **Allow** one plotting error

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Question	Answer	Marks	Guidance
4(d)(ii)	thin, straight line of best-fit drawn with even distribution of points ;	1	line should extend to first and last plotted points but not necessarily touch **Allow ecf** from points plotted in **4(d)(i)** **Do not allow** dot to dot line

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