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CAMBRIDGE
International Education

Cambridge IGCSE™

COMBINED SCIENCE **0653/51**

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	‘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)	initial and highest temp recorded once ; all results recorded ; trend – greatest change in test-tube **A** ; all recorded to 0.5 °C ;	**4**	
1(a)(ii)	temperature change correct for all three test-tubes ;	**1**	**Allow** ECF from **1(a)(i)**
1(a)(iii)	(percentage) concentration (of hydrogen peroxide) ;	**1**	**Allow** volume <u>of hydrogen peroxide</u>
1(a)(iv)	*the test-tubes were covered in foil in step 2* to reduce heat loss / reduce thermal energy loss / reduce heat energy transfer to the environment / reduce radiation ; *the yeast suspension was stirred in step 5* even distribution of yeast / enzyme / catalase / so that yeast is not settled at the bottom idea ;	**2**	**Allow** insulation **Ignore** reduces energy loss alone **Ignore** to reduce heat gain arguments **Allow** to stop light affecting (rate of) breakdown of hydrogen peroxide **Do not allow** to keep temperature constant **Ignore** to prevent temperature loss / decrease **Ignore** mixed unqualified / temperature arguments
1(b)(i)	vertical axis labelled *change in temperature* and °*C* **AND** horizontal axis labelled *percentage concentration of hydrogen peroxide* ; suitable linear scales so that points occupy more than half the grid ; plots correct ± half a small square ;	**3**	**Allow** ΔT / °C **Allow** concentration of hydrogen peroxide / % **Ignore** percentage concentration / concentration of hydrogen peroxide alone **Do not allow** C° **Allow M2 and M3** if axes are reversed **Assume** origin is (0,0) if unlabelled. **Do not allow** M2 or M3 if scale is non-linear or awkward **ECF** from **1(a)(ii)** **Allow** one plotting error
1(b)(ii)	thin straight line of best fit drawn with even distribution of points ;	**1**	**Allow** ECF on points plotted in **1(b)(i)** **Do not allow** dot to dot drawn with a ruler

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Question	Answer	Marks	Guidance
1(b)(iii)	increasing the (percentage) concentration (of hydrogen peroxide) increases rate (of reaction) ;	1	**Allow** rate increases with concentration **Allow** rate is proportional to concentration / it is proportional **Allow** faster reaction for increased rate **Ignore** a higher percentage concentration gives a high rate of reaction. Must be comparative **Ignore** positive relationship / correlation **Ignore** references to time / temperature

Question	Answer	Marks	Guidance
2(a)	carbonate / CO_3^{2-} ;	1	
2(b)	diagram of correctly assembled filter paper, filter funnel and conical flask ; correct labels (filter) funnel, filter paper ;	2	**Note** filter needs to be a V shape with a V at the base / no holes in the filter paper or collecting vessel **Note** funnel must have upper funnel and neck **Ignore** shape of collecting vessel **Allow** other collecting vessels e.g. test-tube / beaker **Ignore** other labels
2(c)	*filtrate:* blue solution ; *residue:* green solid ;	2	**Allow** one mark for blue and green in correct order without states **Allow** blue liquid **Allow** green-blue / turquoise AW **Allow** powder / paste etc
2(d)(i)	blue-green <u>and</u> copper / Cu^{2+} / copper(II) ;	1	**Allow** green or blue alone
2(d)(ii)	(blue) flame does not mask the (flame test) colour ;	1	**Allow** (flame) colour not masked/obscured / (flame) colour is distinct (from colour of Bunsen flame**)** **Allow** to see / distinguish / observe / the colour (clearly) **Allow** sodium gives a yellow flame

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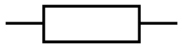
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Question	Answer	Marks	Guidance
3	***One** marking point from each section and any **two** others (if one section is missing max 6 etc):* **1 Apparatus** balance (to measure mass of salt) ; measuring cylinder used to measure volume of a liquid added at the start i.e. salt solution or water or detergent ; **2 Method** method described clearly such that another student could use it to obtain suitable results, dissolve at least two different amounts of salt in water, add liquid detergent, shake and measure amount of foam / final volume ; **3 Measurements** measure mass of salt / gives stated mass(es) of salt with units ; use at least five different masses of salt ; measure the, volume of foam / volume of solution and foam after shaking / (total) volume after shaking ; **4 Control variables** same volume of water / volume of salt solution / same volume of liquid detergent ; same temperature of water ; same time of shaking / number of shakes ; **5 Processing results** calculate volume of foam by subtracting initial volume from final volume / calculate difference between initial and final volume ; plot a graph of mass of salt against volume of foam ;	**7**	**Ignore** scale **Allow** burette / graduated pipette / graduated cylinder for 'measuring cylinder' **Ignore** teat pipette / pipette / syringe / volumetric pipette **Allow** 'amounts' in method section **Ignore** do experiment with no salt / 0 g salt for method and measurements **Ignore** 'measure amounts' unqualified **Allow** measure amount of foam in cm^3 / measure amount of salt in g (may be awarded from a table heading) **Allow** 5 values of mass in g in a table **Allow** measure height of foam **Allow** record = measure but **Ignore** 'calculate' the foam in Section 3 **Allow** 'control the …' for 'use the same …' **Ignore** 'known volume' for 'constant volume' **Allow** 'amounts' in control variables section **Ignore** same room temperature **Allow** reversed axes **Allow** plot a graph of mass of salt against height of foam

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Question	Answer	Marks	Guidance
4(a)	**P** (circled) **and** correct symbol for resistor ;	**1**	**Do not allow** variable resistor / line through resistor 
4(b)(i)	voltmeter reading V_1 ;	**1**	To at least 1dp **Allow** values 1.0–2.0 Check Supervisor Report
4(b)(ii)	ammeter reading I_1 ;	**1**	To at least 1dp **Allow** values < 1.0 Check Supervisor Report
4(b)(iii)	correct calculation of R_1 ;	**1**	**Allow** two or more sig figs correctly rounded
4(c)(i)	$x_2 - x_1 = 50 \pm 1$ cm and consistent with values of x_1 and x_2 ;	**1**	
4(c)(ii)	use pin / nail / jockey / screwdriver ;	**1**	**Allow** named narrow metal apparatus **Ignore** 'use a narrow crocodile clip'
4(c)(iii)	readings for V_2 and I_2 ;	**1**	To at least 1dp **Do not allow** value of V_2 < value of I_2
4(c)(iv)	*Open the switch:* to prevent wires heating up / so that the resistance does not change / increase / to prevent the battery draining ;	**1**	
4(c)(v)	correct calculation of R_2 to **3 s.f.** ;	**1**	Must be to 3 s.f. correctly rounded
4(d)(i)	correct calculation of $5R_1 / 6$;	**1**	
4(d)(ii)	calculation of percentage differences between **4(c)(v)** and **4(d)(i)** ; No if > 10% Yes if < 10% ;	**2**	**Allow** other methods of comparison of percentage difference

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Question	Answer	Marks	Guidance
4(e)	reading / voltage / current will be greater than the scale on either/both meters ;	1	**Allow** volts / amps / 'it' is greater than the scale **Allow** voltmeter maximum is 2 V and power supply is 12 V **Allow** voltage will be greater than 2 V / current will be greater than 1 A ; **Ignore** voltage or current is 'too high'/ higher alone / voltmeter maximum is 2 V alone **Ignore** measurements/numbers are too high **Ignore** wire heats up

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