



**Cambridge Assessment International Education**  
Cambridge International General Certificate of Secondary Education

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**COMBINED SCIENCE**

**0653/52**

Paper 5 Practical Test

**March 2019**

MARK SCHEME

Maximum Mark: 30

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**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 March 2019 series for most Cambridge IGCSE™, Cambridge International A and AS Level components and some Cambridge O Level components.

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This document consists of **7** printed pages.

**PUBLISHED****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.

**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.

<b>Question</b>	<b>Answer</b>	<b>Marks</b>
1(a)(i)	1.5 ; 24.0 ;	<b>2</b>
1(a)(ii)	dish A, 1.5 °C / temperature 1 and dish B, 24 °C / temperature 2 <b>and</b> dish B taller / AW ;	<b>1</b>
1(b)(i)	three lengths recorded ;	<b>1</b>
1(b)(ii)	correct calculation of average ;	<b>1</b>
1(c)	blue-black ; starch present ;	<b>2</b>

Question	Answer	Marks
2	<p><b>Minimum of one from each:</b></p> <p><b>suitable apparatus listed / described</b> beaker / container and ruler beaker / container and balance</p> <p><b>description of method</b> in solution (salt) and soak (amount of time) in water and soak blot dry different salt concentration care with (sharp) knife / (sharp) knife take care not cut (fingers) repeats</p> <p><b>controlled variables</b> temperature time size / mass / length of cylinder same volume solution</p> <p><b>measurement and processing</b> length <b>and</b> mass of cylinder start <b>and</b> end comparison of length vs conc <b>and</b> mass vs conc results, percentage change .....</p>	7

Question	Answer	Marks
3(a)(i)	initial and final T recorded once in Table 3.1 ; all temperatures recorded and final T increases in Table 3.1 ; all temperatures recorded in Table 3.2 ; final T decreases in Table 3.2 ;	4
3(a)(ii)	all 6 changes subtracted correctly AND correct sign ;	1
3(b)(i)	linear scales AND over half of grid ; minimum 5 correct plots $\pm \frac{1}{2}$ square ;	2

Question	Answer	Marks
3(b)(ii)	best-fit straight line AND labelled S ;	1
3(b)(iii)	best-fit straight line AND labelled A ;	1
3(c)(i)	value from their graph AND marking on graph to show this ;	1
3(c)(ii)	value from their graph divided by 2 ; since double volume of water (to cool) ;	2
3(d)	burette for volume / pipette for volume / lid on cup / insulate cup / use thermometer with 0.1 °C divisions ; AVP	1

Question	Answer	Marks
4(a)(i)	sensible value recorded in whole mm ;	1
4(a)(ii)	value > (i) in whole mm ;	1
4(a)(iii)	look reading perpendicular to ruler / ruler close to spring / use of fiducial aid AVP ;	1
4(b)(i)	correct answer based on their values in (a)(i) and (ii) ;	1
4(b)(ii)	3 N ;	1
4(b)(iii)	correct calculation ;	1
4(c)(i)	$l_2 < l_1$ and $x_p$ correct ;	1
4(c)(ii)	correct value ; 2 or 3 sig figs. ;	2

<b>Question</b>	<b>Answer</b>	<b>Marks</b>
4(d)(i)	$l_3 > 2l_0$ ;	<b>1</b>
4(d)(ii)	correct value of $k_s$ ;	<b>1</b>
4(e)	(accuracy mark) expect results support $k_s = 0.5 k$ (and explanation of answers close enough to be within experimental error) ; answer for $k_p = 2k$ should make reference to results and explain in terms of limits of experimental accuracy ;	<b>2</b>