



Cambridge Assessment International Education
Cambridge International General Certificate of Secondary Education

COMBINED SCIENCE

0653/62

Paper 6 Alternative to Practical

March 2019

MARK SCHEME

Maximum Mark: 60

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.

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.

Question	Answer	Marks
1(a)(i)	1.5; 24.0;	2
1(a)(ii)	dish A , 24 °C / temperature 2 and dish B , 1.5 °C / temperature 1 and greater growth in A;	1
1(b)(i)	56 and 46 and 61 ;	1
1(b)(ii)	correct calculation of average ;	1
1(c)	starch present ; no reducing sugars ;	2

Question	Answer	Marks
2	<p>Minimum of one from each:</p> <p>suitable apparatus listed / described beaker / container and ruler, beaker / container and balance</p> <p>description of method 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>controlled variables temperature, time size / mass / length of cylinder same volume solution</p> <p>measurement and processing length and mass of cylinder start and end comparison of length vs conc and mass vs conc results, percentage change ; ; ; ; ; ;</p>	7

Question	Answer	Marks
3(a)(i)	30.0 ; 16.5 ; 10.0 ;	3
3(a)(ii)	all 6 changes subtracted correctly AND correct sign ;	1
3(b)	to get even temperature throughout ;	1

Question	Answer	Marks
3(c)(i)	linear scales AND over half of grid ; 6 correct plots ;	2
3(c)(ii)	best-fit straight line AND labelled S ;	1
3(c)(iii)	best-fit straight line AND labelled A ;	1
3(d)(i)	value from their graph AND marking on graph to show this ;	1
3(d)(ii)	value from their graph divided by 2 ; since double volume of water to heat ;	2
3(e)	not all of the potassium carbonate would dissolve ;	1

Question	Answer	Marks
4(a)(i)	21 (mm) ;	1
4(a)(ii)	took reading perpendicular to ruler / ruler close to spring / use of fiducial aid AVP ;	1
4(b)(i)	112 (mm) ;	1
4(a)(ii)	3.0 N ;	1
4(a)(iii)	0.027 ;	1
4(c)(i)	52 (mm) ;	1
4(c)(ii)	0.058 / 0.0576 ;;	2
4(d)	0.013 (N / mm) ;	1

Question	Answer	Marks
4(e)(i)	correct calculation of $2k$ and $0.5k$;	1
4(e)(ii)	explanation consistent with their results AND reference made to experimental error ;	1
4(f)(i)	larger extensions reduces the effect of measuring errors OWTTE ;	1
4(f)(ii)	if mass too large, spring breaks / (mass) hits the bench / apparatus topples / spring deforms ;	1