Cambridge Assessment International Education
Cambridge International General Certificate of Secondary Education

COMBINED SCIENCE **0653/53**

Paper 5 Practical Test **May/June 2019**

MARK SCHEME

Maximum Mark: 40

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 May/June 2019 series for most Cambridge IGCSE™, Cambridge International A and AS Level and Cambridge Pre-U components, and some Cambridge O Level components.

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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)	clear continuous outline and at least half the box ; some detail of core ;	**2**
1(a)(ii)	correct measurement from drawing ;	**1**
1(a)(iii)	magnification = width of drawing / width of actual apple ;	**1**
1(b)(i)	blue-black ; turns orange / brick-red ;	**2**
1(b)(ii)	starch **and** (reducing) sugar present ;	**1**

Question	Answer	Marks
2	**A apparatus** lamp / sunlight / light source ; apparatus for collecting gas ; stop-clock / timer ; **B method and variables** change brightness of light / change distance (from lamp) ; same amount of time (at each brightness) ; repeat experiment at each brightness ; control length elodea / control volume of water ; control temperature / carbon dioxide / pH ; stated safety precaution linked to apparatus ; **C measurements** measure distance / intensity of light ; measure volume of gas / count bubbles ; **D processing results and make conclusion** calculate rate as volume / number of bubbles per unit time ; idea of looking for relationship between rate / volume / number of bubbles and intensity / brightness / distance ; graph of rate / volume / number of bubbles against intensity / brightness / distance ;	**7**

Question	Answer	Marks
3(a)	all temperatures recorded in Table 3.1 ; temperatures increase then decrease ;	**2**
3(b)(i)	label temperature / °C **and** linear scale **and** plotted points cover at least half grid ; points plotted correctly ± ½ small square ;	**2**
3(b)(ii)	good best-fit line judgement ;	**1**
3(b)(iii)	maximum T from the intersection of their best-fit lines ;	**1**
3(c)	same value as that given for **(b)(iii)**	**1**
3(d)(i)	all temperatures recorded in Table 3.2 ; initial temperature similar to Table 3.1 **and** maximum temperature lower ;	**2**
3(d)(ii)	lines labelled Mg and Zn ; straight line through increasing points **and** line / curve through rest which intersect to give maximum temperature ;	**2**
3(e)	magnesium is more reactive than zinc	**1**
3(f)	any one from: lid **and** reduce heat loss ; insulate cup **and** reduce heat loss ;	**max 1**

Question	Answer	Marks
4(a)(i)	reasonable value to nearest 0.01 g ;	**1**
4(a)(ii)	value between 70–80 cm^3 recorded to nearest 0.5 cm^3 ;	**1**
4(a)(iii)	reasonable value for mass ;	**1**
4(a)(iv)	correct answer from candidates **(a)(i)** and **(a)(iii) ;**	**1**
4(a)(v)	correct calculation ;	**1**
4(b)(i)	reasonable value ;	**1**
4(b)(ii)	reasonable values recorded for both ;	**1**
4(b)(iii)	correct calculation ;	**1**
4(b)(iv)	correct calculation ;	**1**
4(b)(v)	sensible measurement $l_w < l_t$;	**1**
4(b)(vi)	correct calculation leading to answer in the range 1.05–1.75 ;	**1**
4(c)	answer consistent with values in **(a)(v)** and **(b)(vi)** **either** yes **and** values are (sufficiently) close / small percentage difference **or** no **and** values too far apart / large percentage difference	**1**
4(d)	test-tube has rounded bottom / is not of uniform diameter / difficulty in judging length of test-tube below water level / test-tube does not sit exactly vertical in water / AVP	**1**