Cambridge
IGCSE

Cambridge Assessment International Education
Cambridge International General Certificate of Secondary Education

COMBINED SCIENCE **0653/62**

Paper 6 Alternative to Practical **May/June 2018**

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 May/June 2018 series for most Cambridge IGCSE™, Cambridge International A and AS Level and Cambridge Pre-U components, and some Cambridge O Level components.

This document consists of **9** printed pages.

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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)	quality drawing and at least half the box ; some detail in the centre ;	**2**
1(a)(ii)	41 ± 1 ; line **and** measured to nearest mm ± 3 ;	**2**
1(a)(iii)	correct calculation of magnification ;	**1**
1(b)	no protein ;	**1**
1(c)(i)	heat (with benedict's solution) ; reducing sugar present ; yellow / green / orange / red ;	**3**
1(c)(ii)	goggles because of hot water / chemicals in eye ; **OR** use of hot water bath so hot liquid not ejected ;	**1**

Question	Answer	Marks
2(a)(i)	ammonia solution / sodium hydroxide solution ; (pale) blue ppt. ;	2
2(a)(ii)	<table><tr><td>test</td><td>observation with HCl</td><td>observation with H_2SO_4</td></tr><tr><td>silver nitrate **AND** ⬇</td><td>white ppt. **AND** ⮕</td><td>…no reaction / slight white ppt. ;</td></tr><tr><td>… barium nitrate / barium chloride / Ba^{2+} ;</td><td>no reaction **AND** ⮕</td><td>…white ppt. ;</td></tr></table>	3
2(b)	filter funnel, paper and collection vessel ; filtrate and residue correctly labelled ;	2
2(c)(i)	exothermic / (metal) displacement ;	1
2(c)(ii)	copper (metal) / Cu ;	1
2(d)	so test-tube will not crack / break ;	1

Question	Answer	Marks
3(a)(i)	87.8 (cm) ;	**1**
3(a)(ii)	take reading each side and find average / mark the centre point on the block (edge) ;	**1**
3(b)	a = 30(.0) **AND** b = 47.8 ;	**1**
3(c)(i)	axes labelled with units ; suitable choice of scales ($\geqslant$ half the grid used for points) ; 4 plots correct to half a small square ;	**3**
3(c)(ii)	good best fit line judgement ;	**1**
3(c)(iii)	6.0 $\pm$ 1 ;	**1**
3(d)	120 ;	**1**
3(e)	any **one** from: difficulty in obtaining balance ; load **L** not uniform ; difficulty in placing the centre of **L** over the mark on the rule ;	**1**

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Question	Answer	Marks
4(a)	in the dark ; for a few days / at least 24 hours ;	2
4(b)	boiling water ; (hot) alcohol ; hot water bath ; blue-black ;	4
4(c)	starch masks result / to measure starch made in the leaf (in the experiment) ;	1
4(d)	centre of A blue-black ; outside of A brown / orange / yellow ; outside AND centre of B brown / orange / yellow ;	3

Question	Answer	Marks
5(a)	130.95 ;	1
5(b)(i)	1.82 g ;	1
5(b)(ii)	reagents not pure / incorrectly measured reagents ;	1
5(c)	to stop acid spitting **out** ;	1
5(d)(i)	points plotted correctly ;	1
5(d)(ii)	line of best-fit ;	1
5(e)(i)	line **F** same as gradient at start/slightly steeper **and** same starting point ; line (plateauing at) 129 / 128.8 ;	2
5(e)(ii)	line **M** steeper at start and same starting point ; line stops at same value ;	2

Question	Answer	Marks
6(a)(i)	3.7 ; 3.2 ;	**2**
6(a)(ii)	3.5 ;	**1**
6(a)(iii)	times very short / human reaction time :	**1**
6(a)(iv)	to identify anomalies / reduce effects of errors ;	**1**
6(a)(v)	as h increases speed increases ;	**1**
6(b)(i)	timer stopped late / timer started early / not timed between points P and Q ;	**1**
6(b)(ii)	1.9 ;	**1**
6(c)	any **two** from: height of the ramp ; size of the ball ; material of the ball ; surface of the ramp ;	**2**