Cambridge Assessment International Education
Cambridge International General Certificate of Secondary Education

COMBINED SCIENCE **0653/63**

Paper 6 Alternative to Practical **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)	arrow(s) down / into **and** up / out of limewater or test-tube **B** ;	**1**
1(a)(ii)	milky / cloudy / white precipitate ;	**1**
1(a)(iii)	hydrogencarbonate ;	**1**
1(a)(iv)	sterilise mouth piece / avoid sucking up limewater / don't inhale/breathe in / breathe into the tube gently ;	**1**
1(b)(i)	relights glowing splint ;	**1**
1(b)(ii)	20–15 / = 5 ; ÷ 20 × 100 = 25(%) ;	**2**

Question	Answer	Marks
2(a)	measure pulse per unit time / description of taking pulse / heart rate monitor / smart watch or named brand ;	**1**
2(b)	At least one from each: **apparatus** stop watch ; **method and variables** method of exercise ; fixed timed intervals to measure heart rate after exercise ; repeats (the same procedure) (to find an average) ; (controlled variable) same person / control intensity of exercise e.g. same duration / same distance to run ; safety, eg running shoes so don't slip / awareness of asthma or injury ; **measurements and processing and use of results** pulse rate taken (at rest) before (and after exercise) ; pulse rate taken in 10s and multiplied by 6 / AW ; measure time between <u>end of exercise</u> and to return to normal pulse rate ; graph of time v pulse rate – read off when back to resting ;	**6**

Question	Answer	Marks
3(a)(i)	beaker / container of water ; delivery tube leads gas to upturned measuring cylinder in water with labels ;	**2**
3(a)(ii)	use a (gas) syringe ;	**1**
3(a)(iii)	86.5 ; 93.0 ;	**2**
3(b)(i)	axes labelled with units ; linear scale more than half grid ; at least 4 points plotted correctly to within half a small square ;	**3**
3(b)(ii)	continuous curve through points ;	**1**
3(c)	finishes / stops / no more CO_2 made / CO_2 stays the same **and** one or both reagents have run out ;	**1**
3(d)	line steeper (to the left) ; line continues or ends higher ;	**2**
3(e)	calcium sulfate coats the marble chips / stop acid reaching marble chips ;	**1**

Question	Answer	Marks
4(a)(i)	rubber ;	**1**
4(a)(ii)	rubber ;	**1**
4(a)(iii)	lead copper aluminium ;	**1**
4(a)(iv)	as density increases speed of sound decreases / the higher the density the slower the sound / ORA ;	**1**
4(b)(i)	58.91 – 42.65 / idea of subtracting mass of empty measuring cylinder ; 16.26 (g) ;	**2**
4(b)(ii)	make sure that the measuring cylinder is dry before measuring its mass / measure the mass (of the cylinder) before putting the water in ;	**1**
4(b)(iii)	16.5 ;	**1**
4(b)(iv)	0.985 / 0.99 (g / cm^3) ;;	**2**
4(b)(v)	(**(b)(iv)** ÷1000=) 0.000985 (kg / cm^3)	**1**
4(b)(vi)	(**(b)(v)** × 1000 000=) 985 (kg / m^3)	**1**
4(c)	yes (they are within limits of experimental accuracy) because values are close together OWTTE	**1**