CO-ORDINATED SCIENCES **0654/63**

Paper 6 Alternative to Practical **October/November 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 October/November 2018 series for most Cambridge IGCSE™, Cambridge International A and AS Level 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)	smooth continuous outline ; larger than original drawing ; anther **and** filament clearly visible ; stigma **and** style clearly visible ;	4
1(a)(ii)	petal correctly labelled ; stigma correctly labelled ; anther correctly labelled ;	3
1(b)(i)	ethanol ; water **and** white emulsion ;	2
1(b)(ii)	opaque so masks observation ;	1

Question	Answer	Marks
2(a)(i)	filter funnel, paper and test-tube drawn ; at least two of funnel, paper and test-tube labelled ; positions of residue and filtrate correctly labelled ;	3
2(a)(ii)	so no impurities introduced / so no other ions introduced ;	1
2(b)	Cu^{2+} / copper(II) / copper ion ;	1
2(c)(i)	no ppt. / no reaction / remains colourless / no change ; blue / stays blue / no change **AND** (red goes) blue ;	2
2(c)(ii)	ammonia solution gives off ammonia gas (under all circumstances) ;	1
2(c)(iii)	(nitric) not CO_3^{2-} / not carbonate ; (barium nitrate) SO_4^{2-} / sulfate ;	2

Question	Answer	Marks
3(a)(i)	60.5 °C ;	**1**
3(a)(ii)	to give the thermometer time to react / to record the highest temperature reached ;	**1**
3(a)(iii)	*any two from* read perpendicular to scale ; stir (before reading) ; place clock close to test tube ; keep thermometer at same level ; keep the thermometer in the water ;	**max 2**
3(b)(i)	s **and** °C **and** °C ;	**1**
3(b)(ii)	33.5 (°C), 22.5(°C) ;	**1**
3(c)	Faster rate of cooling / more cooling / loses more heat / loses more temperature in cold surroundings ; bigger temperature drop in the **same time /** reference to data with time ;	**2**
3(d)	**improvement:** use measuring cylinder to measure water poured into test-tube / mark the test-tube ; **reason:** to compare equal volumes / amounts of water each time / amount of water affect cooling ; **improvement:** same volume of water ; **reason;** same surface area / different rates of cooling of different volumes / amount of water affect cooling ;	**2**

Question	Answer	Marks
4(a)(i)	2 1 3 2 ;	**1**
4(a)(ii)	1 ;	**1**
4(b)	axes labelled ; linear vertical axis <u>and</u> using more than half the grid ; bars correct height ± half a square ; same width bars ;	**4**
4(c)(i)	damp and dark ;	**1**
4(c)(ii)	all placed in the centre / two in each section / randomly ;	**1**
4(c)(iii)	*any two from* leave longer than 15 minutes ; use more woodlice ; repeat more times ;	**max 2**

Question	Answer	Marks
5(a)(i)	anhydrous / white copper sulfate ; turns blue ;	**2**
5(a)(ii)	to condense any water vapour ;	**1**
5(b)(i)	delivery tube under level of liimewater in the bottle ;	**1**
5(b)(ii)	white ppt. / milky ;	**1**
5(c)	do not agree (no mark) cannot be sure of complete combustion / burns in air not oxygen / incomplete combustion ; other gases may have been produced / CO / gas goes to pump ; carbon may be produced ; there are only two tests ;	**max 2**
5(d)	water condenses in limewater and never reaches U-tube / water condensing in U-tube could have come from limewater ;	**1**
5(e)	to show that little or no water comes from the air / to show that little or no carbon dioxide comes from the air / to show that the carbon dioxide and water come from the burning ;	**1**
5(f)	soot / carbon ;	**1**

Question	Answer	Marks
6(a)	60 ;	**1**
6(b)	8.2 ;	**1**
6(c)(i)	both axes labelled with units ; linear scale covering $\geqslant 1/2$ paper ; minimum 4 plots correct, $\pm$ ½ square ;	**3**
6(c)(ii)	straight line of best-fit ;	**1**
6(d)	correct value from their graph AND shown on graph ;	**1**
6(e)(i)	(increases) less %age error on a larger distance ;	**1**
6(e)(ii)	wider tank ;	**1**
6(f)	too little change / d small / d small range ;	**1**