



Cambridge IGCSE™

COMBINED SCIENCE

0653/61

Paper 6 Alternative to Practical

October/November 2021

MARK SCHEME

Maximum Mark: 40

Published

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This document consists of **8** printed pages.

Question	Answer	Marks
1(a)	<i>any two from:</i> the animal from the cold climate / the bear, has: ORA thick(er) / long(er) / more, fur ; a short(er) / no, tail ; (all) legs of equal length / short relative to body size ; small(er) eyes (relative to size of animal) ;	2
1(b)(i)	88 ; 77 ;	2
1(b)(ii)	16 AND 23 ;	1
1(c)	linear temperature scale such that points cover more than 50% of grid ; points for small beaker plotted correctly ; points for large beaker plotted correctly ; smooth, lines / curves, of best-fit drawn ;	4
1(d)	<i>any two from:</i> temperature decreases (with time) (for both) ; (temperature change in) small beaker, decreases faster / decreases more / cools more ; ORA temperature of large beaker is (always) higher ;	2
1(e)	small animal / animal from hot climate AND temperature change in larger beaker is smaller / slope of graph is less steep ; ORA	1
1(f)	use same starting temperature of water / use higher starting temperature / increase measurement time ;	1

Question	Answer	Marks
2(a)(i)	measuring cylinder / syringe ;	1
2(a)(ii)	carbon dioxide ;	1
2(a)(iii)	green solid ; blue solution ;	2
2(a)(iv)	<i>any three from:</i> heat (solution) ; until crystals start to form / until saturated / to reduce the volume / to evaporate (the solution) ; idea of leaving (after heating) to cool ; filter crystals from solution / dry crystals on filter paper ;	3
2(b)(i)	(light) blue precipitate ; (dissolves into a) dark blue solution ;	2
2(b)(ii)	aqueous barium nitrate AND dilute nitric acid ;	1
2(c)(i)	idea of preventing contamination from the wire ;	1
2(c)(ii)	(yellow indicates) it has sodium (ions) in it / the colour should just be (blue-)green / flame contains yellow / not a single colour ;	1
2(c)(iii)	it is hotter / higher temperature / does not leave soot on the wire / heats faster ;	1

Question	Answer	Marks
3(a)(i)	eyes level with water level / looks perpendicular (to the surface of the water) / puts measuring cylinder on flat surface / reads from bottom of meniscus ;	1
3(a)(ii)	74.0 ; 78.5 ;	2
3(a)(iii)	4.5 (cm ³) ;	1
3(b)	$1.9 \div 4.5 = 0.422222$; correct answer to 2 sig. figs. 0.42 (g / cm ³) ;	2
3(c)	to immerse the cork / to make it sink completely under the water / AW ;	1

Question	Answer	Marks
4	one from each section and then any other two marks 1. apparatus stop-watch / timer / (stop-)clock / chronometer ; balance ; 2. method wet sample(s) of material(s) / dip into water ; spread flat / hang up ; use a fan / put in warm place / put in oven / place in specified outdoor conditions, e.g. sun, wind ; safety precaution specific to, heating apparatus / use of fan / cutting ; 3. measurements measure mass of wet sample at start ; measure mass of sample after a specified amount of time / measure time taken for a specific mass to evaporate ; 4. variables to be controlled fabric surface area / (specified) size of fabric ; temperature OR stated drying, environment / place / conditions ; 5. processing and use of results (repeat each experiment and) calculate average ; the one with shortest drying time or most mass lost has the <u>fastest rate of evaporation</u> OR A ;	7