

Cambridge IGCSE™

COMBINED SCIENCE**0653/62**

Paper 6 Alternative to Practical

October/November 2022**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.

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Question	Answer	Marks
1(a)(i)	mass recorded as 11.8 g ;	1
1(a)(ii)	correct calculation (+)1.8 ;	1
1(b)(i)	10.0 circled ; 7.5 circled ;	2
1(b)(ii)	(the volume is) smaller / decreased ;	1
1(c)	idea that, mass of water / salt solution, on outside of piece of potato needs to be removed from final mass measurement ;	1
1(d)	anomalous results can be, identified / excluded ;	1

Question	Answer	Marks
2	<i>one marking point from each section and then any two others</i> 1 apparatus stop-clock / pulse meter / heart rate monitor, to measure pulse ; stop-clock to measure time (duration of exercise / return to normal) ; exercise apparatus, e.g. treadmill / apparatus for measuring, distance / height, e.g. tape measure ; 2 brief description of method and safety precautions obtain normal / resting pulse rate before exercise ; monitor pulse until it returns to resting rate ; exercise, named / described ; repeat with at least 4 different ages ; safety precaution given AND linked to hazard identified for, people / equipment ; 3 measurements pulse in certain time / pulse rate using a monitor ; time taken for pulse to return to, resting / normal ; measures / states, distance / height / duration of exercise ; 4 constant variables time / distance, of exercise ; intensity / speed / number of exercise(s) ; fitness characteristics of subjects / rest period between repeats / AVP ; 5 processing calculate average recovery time from repeats / repeat to exclude anomalous results ; calculate pulse rate / number of pulses per unit time ; plot graph / chart, of age against recovery time ;	7

Question	Answer	Marks
3(a)(i)	distilled water 21.0 ; solution 26.5 ;	2
3(a)(ii)	change 5.5 ;	1
3(b)	any value greater than 10 AND less than 14 ;	1
3(c)(i)	91.5 circled AND should be to the nearest second / AW ;	1
3(c)(ii)	to ensure there is complete reaction ;	1
3(c)(iii)	as the mass of solid increases, the reaction time increases / AW ;	1
3(c)(iv)	0.016(666666) ; 0.017 ;	2
3(c)(v)	test limewater / (aqueous) calcium hydroxide AND observation milky ;	1
3(d)(i)	hold wire with sample / soaked splint with sample (in flame) ; <u>blue</u> flame (of Bunsen) ;	
3(d)(ii)	sample should give a yellow colour for sodium / (ilic indicates) potassium present ;	1

Question	Answer	Marks
4(a)(i)	324 ;	1
4(a)(ii)	21.2 ;	1
4(a)(iii)	21.067 to any sig. figs.; 21.1 ;	2
4(b)(i)	19.1 ;	1
4(b)(ii)	example of measurement error that gives a bigger time / reason suggested for object falling more slowly to the ground ;	1
4(c)(i)	axes correct way round and labelled with units ; suitable linear scales such that plots occupy at least half the grid ; plots correct ;	3
4(c)(ii)	appropriate best-fit straight line ;	1
4(c)(iii)	as r^2 increases, the average time increases / AW ;	1
4(d)(i)	2.5 (cm) ;	1
4(d)(ii)	idea of, a short time, being difficult to measure / causing larger uncertainty in time measurement ;	1