



Cambridge IGCSE™

COMBINED SCIENCE

0653/63

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)	2 (mm) ; 55 (mm) ;	2
1(a)(ii)	subtract position of first edge from position of second edge then halve and add to position of first edge / take diameter of bubble and halve ;	1
1(a)(iii)	53 (mm) ;	1
1(b)(i)	axes labelled with quantity and unit ; linear scale such that points cover more than 50% of the grid ; points plotted correctly ;	3
1(b)(ii)	smooth, single line of best fit drawn ;	1
1(c)(i)	as temperature increases, the distance moved (by the bubble) increases ;	1
1(c)(ii)	as temperature increases, the amount of water lost (by the plant shoot) increases ;	1
1(d)	<i>any two from:</i> humidity ; air movement ; light, level / intensity ;	2
1(e)	the distance moved by the bubble will be greater / stated value greater than 10 (mm) ;	1

Question	Answer	Marks
2(a)(i)	109 (mm) ;	1
2(a)(ii)	26 (cm ³) ;	1
2(b)(i)	hydrogen ;	1
2(b)(ii)	there was magnesium / solid left over ;	1
2(b)(iii)	<i>residue</i> : grey or silver solid / metal ; <i>filtrate</i> : colourless solution ;	2
2(c)	<i>test</i> : (acidify, then) add aqueous barium nitrate ; <i>observation</i> : white precipitate ;	2
2(d)	<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(e)(i)	a gas is formed / steam is formed / water given off / liquid evaporates ;	1
2(e)(ii)	it is hotter / higher temperature / does not leave soot on the test-tube / heats faster ;	1

Question	Answer	Marks
3(a)	12.1 (s) ; 12.0 (s) ;	2
3(b)	experiment 3 AND time is significantly longer than all the other times ;	1
3(c)	12.1 ;	1
3(d)	1.21 (s) ;	1
3(e)	correct calculation / 9.5621 ; correct answer to 2 sig. figs. / 9.6 ;	2

Question	Answer	Marks
4	one mark from each section and then any other three marks 1. method cut small pieces of paper (using scissors) ; hold charged rod, close to / touching, small pieces of paper ; until no more paper is picked up by the rod ; 2. measurements count (maximum) number of pieces of paper picked up (by rod) ; states a measurement for a control variable: rub the rod for stated amount of time, e.g. 10 s / rub the rod for a stated number of times / hold the rod a stated distance from the pieces of paper, e.g. 0.5 cm–2 cm / hold the rod (near the paper) for a stated amount of time ; 3. control variables way of standardising the charging, e.g. number of rubs of cloth, rub (continuously) for, set time / same amount of time; identical pieces of paper / same, size / shape / type, of paper ; same distance between rod and pieces of paper ; keep rod near papers for the same amount of time ; same-sized rods ; 4. processing and conclusion calculate the average number of pieces of paper picked up for each rod ; compare number of pieces of paper picked up for each rod ; the rod with the most charge picks up the most pieces of paper ;	7