

Cambridge IGCSE™

COMBINED SCIENCE**0653/61**

Paper 6 Alternative to Practical

October/November 2025

MARK SCHEME

Maximum Mark: 40

Published

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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)	30 ; 56 ;	2
1(b)(i)	horizontal axis labelled 'number of <u>pieces</u> (of potato)'; AND vertical axis labelled 'height (of foam) / mm' ; suitable linear scales such that plotted points occupy at least half of the grid ; correct plots to $\pm \frac{1}{2}$ small square ;	3
1(b)(ii)	suitable best-fit curve between points ;	1
1(b)(iii)	the greater the surface area, the greater the height (of foam) ;	1
1(b)(iv)	correct value from graph for 12 pieces with vertical and horizontal line to each axis shown ;	1
1(c)	Controls (total) amount of potato used / same (total) amount of potato / same (total) mass/volume of potato / same (total) amount of enzymes / same initial surface area / same surface area at the start/before cylinder is cut into pieces / only surface area of the potato changes / only the number of pieces of potato changes ;	1
1(d)(i)	uneven surface / different sizes of bubbles / changing surface of bubbles / bubbles burst / difficult to judge/decide bottom or top of the foam;	1
1(d)(ii)	(measure oxygen because...) oxygen/gas cannot escape OR (measuring foam) oxygen/gas escapes / bubbles burst / level of foam decreases / bubbles decrease ;	1
1(d)(iii)	collection: suitable apparatus drawn gas syringe/collection over water ; measurement: <u>gas</u> syringe/measuring cylinder/burette/graduated test-tube labelled ;	2

Question	Answer	Marks
2(a)	115.0 ; 115.0 ;	2
2(b)	measuring cylinder :	1
2(c)	(yes/statement is supported and) the masses (in Table 2.1) are the same / both are 115(.0) ;	1
2(d)	sulfate / SO_4^{2-} AND (barium nitrate gives) white precipitate ;	1
2(e)	makes carbon dioxide / a gas ; so cannot use a closed system / should not use a sealed flask / should not use a flask with a bung / gas cannot escape / gas/pressure blows out the stopper/breaks the flask idea ;	2
3	one from each section and any other two marks 1 Apparatus balance and thermometer ; measuring cylinder / volumetric or graduated pipette / burette ; 2 Method method described clearly such that another student could use it to obtain suitable results i.e. add (two or more) different masses/amounts of citric acid (in a suitable container) to (aqueous) sodium hydrogencarbonate then measure the temperature ; 3 Measurements initial temperature (of aqueous sodium hydrogencarbonate) ; measure the <u>lowest</u> temperature ; use at least <u>five</u> different masses of citric acid / states at least <u>five</u> masses with units ;	7

Question	Answer	Marks
3	4 Control variables (in experiments with different masses) same/stated volume of (aqueous) sodium hydrogencarbonate ; same starting/initial temperature (of aqueous sodium hydrogencarbonate) ; 5 Processing results and conclusions subtract lowest temperature from initial (to find temperature decrease/change) ; plot a graph of temperature <u>decrease</u> against mass (of citric acid) ;	

Question	Answer	Marks
4(a)(i)	39.4 / 39.5 / 39.6 ;	1
4(a)(ii)	has sharp(er) point / thin(ner) / not as wide / crocodile clip C is (too) wide ; more accurate reading/value/measurement of d_0 / points to single/exact value/reading / does not obscure/hide/cover the numbers or readings on ruler ;	2
4(a)(iii)	correct calculation of R (unrounded) ; to 2 significant figures ;	2
4(b)(i)	0.08 (A) ; 1.2(0) (V) ;	2
4(b)(ii)	does not rely on (human) judgment / less likely to make a <u>measurement</u> error / less likely to make an error <u>when taking a reading</u> idea / needle fluctuates/does not stay still ;	1
4(b)(iii)	correct calculation of R ;	1

Question	Answer	Marks
4(c)	Method 1 calculates percentage difference AND states appropriate conclusion i.e. M1 %ge difference is $(15-13) = 2 \div 13 \times 100 = \mathbf{15.384}$ OR $(15-13) = 2 \div 15 \times 100 = \mathbf{13.33333}$; M2 (correct calculation plus statement that) no / not within 10% / they are not equal ;	2
4(d)	any two from: to prevent overheating / allow components to cool ; to keep resistance constant / so resistance does not increase ; to prevent cell/battery being drained ;	2