



Cambridge IGCSE™

PHYSICS

0625/62

Paper 6 Alternative to Practical

May/June 2023

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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This document consists of **10** printed pages.

Question	Answer	Marks
1(a)	diagram clearly showing the distance l_0 <u>marked</u>	1
1(b)(i)	second e value: 2	1
	remaining e values: 5, 7, 8, 10	1
1(b)(ii)	N, mm, mm cao	1
1(c)	graph:	1
	• axes correctly labelled with quantity and unit and the right way round	
	• suitable scales filling $\geq \frac{1}{2}$ the grid between the extreme plotted points	1
	• six plots correct to $\frac{1}{2}$ small square – origin must be included	1
1(d)	• good line judgement, thin, continuous line	1
	correct method shown clearly on graph	1
	candidate's value read correctly to $\frac{1}{2}$ small square	1
	5.2 ± 0.2 (mm)	1

Question	Answer	Marks
2(a)	23(.0) (°C) cao	1
2(b)(i)	s, °C	1
2(b)(ii)	0, 30, 60, 90, 120, 150, 180	1
2(c)(i)	$\Delta\theta = 17$	1
2(c)(ii)	$R = 0.0944$	1
	unit °C / s	1
2(d)	any two from: • remove lid • thinner lid • paint the beaker black • stir the water • change beaker to container that is a better conductor / named metal • increase surface (area of water / beaker) • use a wider beaker • blow air over water surface / use a fan • use a smaller volume of water	2

Question	Answer	Marks
2(e)	statement: view <u>thermometer / scale / reading</u> at right angles / eye level explanation: to avoid parallax error OR statement: stir (before taking reading) explanation: to distribute water evenly / to ensure that all the water is at the same temperature OR statement: ensure thermometer does not touch the side / base of beaker explanation: temperature different to that of the bulk of the liquid OR statement: wait until the thermometer (reading) stops rising at the <u>start</u> explanation: so that the maximum temperature of the liquid is recorded	2
2(f)	negligible / very small volume / amount of water between the bottom and the top of the meniscus	1

Question	Answer	Marks
3(a)(i)	normal at 90° and in the centre of AB	1
3(a)(ii)	$i = 20 \pm 2$	1
3(a)(iii)	P_1 and P_2 must be ≥ 5.0 cm apart	1
3(b)(i)	line joining pin positions continued to AB and <u>either</u> end of line labelled E	1
3(b)(ii)	$\theta = 32 \pm 2$	1
	unit $^\circ$	1
3(c)	any one from: - view bases of pins - place pins as far apart as possible / > 5 cm apart - ensure pins are vertical / at right angles to ray-trace sheet - draw thin lines - use a sharp pencil - use thin pins	1
3(d)(i)	$\alpha = 69 \pm 2(^\circ)$	1
3(d)(ii)	$\beta = 90 - \alpha$	1
3(e)	statement to match results – expect YES	1
	explanation of idea of beyond limits of experimental accuracy e.g. values close (enough) / not too far apart / $< 10\%$ difference if values are equal, it is sufficient to say just that the values are equal	1

Question	Answer	Marks
4	MP1 method: <u>measure</u> the distance between the electrodes	1
	MP2 method: measure / record / take / check / note the current or the ammeter reading	1
	MP3 method: repeat with at least four <u>other</u> distances	1
	MP4 key variables: potential difference / supply voltage / battery voltage / power supply	1
	MP5 key variables: any one from: • depth of immersion of electrodes • volume / amount of liquid • mass / size / material of the electrodes • room temperature • temperature / concentration of the liquid • type of liquid / electrolyte	1
	MP6 table: table with columns for distance and (change in) current with appropriate units	1
	MP7 conclusion: draw a graph of (change in) current against distance OR (use results table to) compare distances with currents OR (compare results to) see if changing the distance has any effect on the current	1