



Cambridge IGCSE™

PHYSICS

0625/61

Paper 6 Alternative to Practical

May/June 2023

MARK SCHEME

Maximum Mark: 40

Published

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This document consists of **9** printed pages.

Question	Answer	Marks
1(a)(i)	10.0	1
1(b)	obtaining exact balance OR judging position of (centre of) load OR masses sliding on ruler	1
1(c)	graph: • axes right way round and correctly labelled with quantity and unit	1
	• suitable scales	1
	• all five plots correct to $\frac{1}{2}$ small square	1
	• good line judgement, thin, continuous line	1
1(d)	method shown correctly on graph	1
	candidate's value read correctly to $\frac{1}{2}$ small square	1
	value in range 25.0–29.0 cm	1
1(e)	balance ruler (on pivot with no loads)	1
	pivot point is read / balance point shows centre of mass	1

Question	Answer	Marks
2(a)	21 (°C)	1
2(b)(i)	s, °C	1
2(b)(ii)	0, 30, 60, 90, 120, 150, 180	1
2(c)(i)	$\Delta\theta = 25$	1
2(c)(ii)	$R = 0.14$ or 0.139 to 2 or 3 significant figures ONLY	1
	unit °C / s	1
2(d)(i)	continue taking temperatures / continue for a longer time (until close to room temperature) OR use lower / higher starting temperature (of water)	1
2(d)(ii)	plot a graph	1
	of temperature against time OR cooling rate against time / temperature	1
2(e)	to avoid parallax error owtte	1
2(f)	read at bottom of meniscus OR ensure measuring cylinder is on horizontal surface	1

Question	Answer	Marks
3(a)	normal at 90° and in centre of AB	1
3(b)(i)	CD is in lower left quadrant and $i = 30^\circ \pm 2^\circ$	1
3(b)(ii)	P_1 and P_2 at least 5.0 cm apart	1
3(c)(i)	straight line through pins P_3 and P_4 to AB	1
3(c)(ii)	all three lines LN , CD and CE drawn and meet or would meet at C within approx. 2 mm (by eye), drawn neatly and not too thick	1
	α in range $47^\circ - 51^\circ$	1
3(d)	any one from: - view bases of pins - place pins (as) far apart (as possible) - ensure pins are vertical - sharp pencil / thin lines / thin pins	1
3(e)(i)	β in range $70^\circ - 73^\circ$	1
3(e)(ii)	correct answer for θ (which is $90 - \beta$)	1
	correct working shown ($90 - \beta$)	1
3(f)	statement to match results with justification including the concept of within or beyond the limits of experimental accuracy	1

Question	Answer	Marks
4	MP1 circuit diagram – power supply, lamp and ammeter in series, voltmeter in suitable position to read V across lamp	1
	MP2 measure the current and potential difference	1
	MP3 calculate resistance	1
	MP4 repeat with at least two other currents / voltages / settings of variable resistor / power supply	1
	MP5 a way to change the current/voltage (e.g. adjusting / using variable resistor OR changing voltage of power supply OR adding batteries)	1
	MP6 table with columns for potential difference, current and resistance, headed with quantities and appropriate units	1
	MP7 plot graph of resistance against current OR compare values of <u>resistance</u> and <u>current</u> in table	1