

Cambridge IGCSE™

PHYSICS**0625/62**

Paper 6 Alternative to Practical

February/March 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)	Two techniques from: reading viewed perpendicularly; ruler close to spring; use of set-square / short ruler to measure length of spring; use of set-square to check ruler is vertical; use of horizontal marker.	2
1(b)	graph: • axes correct way round and labelled with quantity and unit	1
	• appropriate scales (plots occupying at least $\frac{1}{2}$ grid)	1
	• plots all correct to $\frac{1}{2}$ small square <u>and</u> precise plots	1
	• well-judged line <u>and</u> thin line	1
1(c)	correct reading of intercept	1
1(d)(i)	$l_k = \underline{10.0\text{ cm}}$	1
1(d)(ii)	lines / mark on graph to show how value used	1
	m_x in range 180 g to 240 g	1
1(e)	130 is more suitable <u>and</u> data values in table to less significant figures than other answer / reference to precision of apparatus	1

Question	Answer	Marks
2(a)(i)	$\theta_R = 21(^{\circ}\text{C})$	1
2(a)(ii)	read scale perpendicularly	1
2(b)	reference to how to take reading at precise time e.g. have stop-watch and thermometer near each other; e.g. set a timer for every 30 s; e.g. one student watch timer & another student read thermometer	1
2(c)	beaker A / insulated beaker cools more slowly (owtte)	1
	comparison of temperature changes over <u>180 s</u> , matching statement (need to see <u>values</u> used in justification)	1
2(d)(i)	$x_1 = 0.067$ and $x_2 = 0.044$	1
2(d)(ii)	units $^{\circ}\text{C} / \text{s}$	1
2(e)	comparison of their x_1 and x_2	1
	yes / therefore beaker A and B must start at same temperature <u>and so comparison only depends on insulation</u>	1
2(f)(i)	add lids to both beakers / add insulation all over both beakers / cover both beakers	1
2(f)(ii)	cooling rates decrease	1

Question	Answer	Marks
3(a)(i)	normal correct	1
3(a)(ii)	$\theta = 40^\circ \pm 1^\circ$	1
3(b)(i)	$d = 4(.0 \text{ cm})$	1
3(b)(ii)	not a suitable distance apart / owtte <u>and</u> pin separation should be as large as possible / pin separation is too small / owtte	1
3(c)	set of lines present and in correct positions In this context: Line FG must touch P3 and P4 Line EJ must be straight (accept EJ not shown within block)	1
3(d)(i)	$\alpha = 53^\circ \pm 2^\circ$ <u>and</u> $\beta = 50^\circ \pm 2^\circ$	1
3(d)(ii)	statement matching results	1
	justification matching statement ('within limits of experimental accuracy' / within 10% / close together owtte)	1
3(e)	Two valid techniques from: draw thin rays / draw thin lines / use sharp pencil; look at base of pins / keep pins vertical; use thin pins; ensure pins are as far apart as possible	2
3(f)	difficult to align pins accurately	1

Question	Answer	Marks
4	MP1 circuit diagram: correct voltmeter circuit symbol shown in parallel with all or part of wire	1
	MP2 apparatus: metre ruler	1
	MP3 method: measure / record length; measure p.d. and current; specific reference to repeating with different length	1
	MP4 key / control variable: constant diameter / radius / gauge of wire material of wire / same wire / same type of wire	1
	MP5 table: columns, with units, for length, p.d., current, resistance	1
	MP6 analysis: compare readings in the table to see if change in length produces change in resistance plot resistance-length or length-resistance graph	1
	MP7 additional point (one from): at least 5 sets of data taken; repeat for each length <u>and</u> take average; 2nd control variable: diameter / material / temperature of wire; use of protective resistor	1