

Cambridge IGCSE™

PHYSICS**0625/62**

Paper 6 Alternative to Practical

May/June 2024

MARK SCHEME

Maximum Mark: 40

Published

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This document consists of **8** printed pages.

Question	Answer	Marks
1(a)(i)	17.76 (s)	1
1(a)(ii)	T calculation correct from candidate's value, expect 0.888	1
1(b)	(time a) greater number of oscillations	1
1(c)	k_1 calculation correct, expect 25.0	1
1(d)(i)	5.6 (cm)	1
1(d)(ii)	22.4 (cm) / candidate's (d)(i) $\times 4$	1
1(e)(i)	graph: appropriate scales (plots occupying at least $\frac{1}{2}$ grid between plotted points)	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(e)(ii)	any indication on the <u>graph</u> as to how gradient found <u>and</u> correct <u>method</u> of calculation of gradient i.e., $\Delta y / \Delta x$ shown	1
1(e)(iii)	$k_2 = 23.5 - 26.4$ inclusive	1
1(f)	statement to match candidate's values of k_1 and k_2	1
	<u>values used</u> in a calculation to justify the statement	1

Question	Answer	Marks
2(a)	$V = 0.84$ (V)	1
	$I = 0.36$ (A)	1
2(b)	2.3(3.....)	1
	2.3 (Ω)	1

Question	Answer	Marks
2(c)	3.1 (Ω)	1
	0.18 (A)	1
2(d)(i)	as the current decreases the potential difference / voltage across the diode remains (fairly) constant / decreases (slightly)	1
2(d)(ii)	as the current decreases the resistance increases	1
2(e)	diode / power supply / ammeter connected: the wrong way around / flipped / in the wrong direction	1
2(f)	variable resistor <u>and</u> correct symbol	1

Question	Answer	Marks
3(a)(i)	normal correct and labels N, M, G present and correct	1
3(a)(ii)	$60 (^{\circ}) \pm 1$	1
3(b)	lines FZ and EH present together with H, Z labelled correctly	1
3(c)(i)	$l = 7.5 \pm 0.1$ (cm)	1
3(c)(ii)	$d = 3.(0) \pm 0.2$ (cm)	1
3(c)(iii)	d / l in the range 0.36 to 0.44 inclusive	1
3(d)	repeat with $\theta = 60^{\circ}$ on the other side of the normal OR repeat with optical pins	1
3(e)	thickness of the light rays/difficulty in aligning incident ray with FE / difficulty of placing crosses accurately/difficult to judge the centre of the ray	1
3(f)(i)	$L = 4.3 \pm 0.1$ (cm)	1
3(f)(ii)	n value in the range 1.40 to 1.65 inclusive	1

Question	Answer	Marks
4	MP1 variable chosen: valid variable which may affect d	1
	MP2 additional apparatus: ruler/measuring tape AND additional apparatus (if needed) to measure the independent variable	1
	MP3 method: • (place ball and release), measure dependent variable • repeat for new value of independent variable	1
	MP4 control variables: any significant variable appropriate to the independent variable	1
	MP5 table: columns, with <u>units</u> , for independent variable and dependent variable	1
	MP6 conclusion: compare readings in the table to see if/how a change in the variable produces change in d OR plot a (line) graph with <u>axes specified</u>	1
	MP7 additional point: any one from: • second valid control variable stated • at least 5 sets of data taken • repeat each <u>measurement</u> AND take the average	1