



Cambridge IGCSE™

PHYSICS

0625/63

Paper 6 Alternative to Practical

May/June 2021

MARK SCHEME

Maximum Mark: 40

Published

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

Question	Answer	Marks
1(a)	any 2 valid precautions e.g: rule close rule parallel to spring eye perpendicular to reading use set square clamp rule	2
1(b)(i)	$l = 10.7 \text{ (cm)}$	1
1(b)(ii)	$e = 8.4 / \text{ecf (cm)}$	1
1(c)	e_u present	1
1(d)	$W_R = 1.2$ and <u>unit</u> (N) correct working shown	1
	l_w and e_w present	1
	$\rho = 1.5 \text{ (g / cm}^3\text{)}$ given to 2/3 significant figures	1
1(e)	any valid source of inaccuracy e.g: part of load U is metal hanger immersed too clay wet when weight measured air holes in clay air bubbles on immersed clay	1
1(f)	straight line	1
	stated as going through origin	1

Question	Answer	Marks
2(a)	correct voltmeter symbol in parallel with resistor and cell	1
2(b)	$I_A = 0.64 \text{ (A)}$	1
2(c)	graph: - axes labelled with quantity and unit - appropriate scales (plots occupying at least $\frac{1}{2}$ grid) - plots all correct to $\frac{1}{2}$ small square and <u>precise</u> plots - well judged line and <u>thin</u> line	1
2(d)	E in range 1.3 to 1.7 (V)	1
2(e)(i)	G present and triangle method seen on <u>graph</u>	1
2(e)(ii)	r in range 0.9 (Ω) to 2.0 (Ω)	1
2(f)	obtain more values at other potential differences	1
	start V axis at 3.0 (V) to expand scale	1

Question	Answer	Marks
3(a)(i)	normal correct	1
3(a)(ii)	$\theta = 20^\circ \pm 1^\circ$	1
3(b)	not suitable should be as far apart as possible	1
3(c)	all lines present and neat	1
3(d)(i)	$a = 6.2$ (cm) and $b = 4.3$ (cm) both ± 1 mm	1
3(d)(ii)	$n = 1.4(1)$	1
	expressed to 2/3 significant figures <u>and</u> no unit	1
3(e)(i)	$\alpha = 21^\circ \pm 2^\circ$	1
3(e)(ii)	statement matching results <u>and</u> justification matching statement ('within limits of experimental accuracy' / owtte)	1
3(f)	any suitable precaution e.g. look at base of pins/keep pins vertical use thin pins thin lines	1
3(g)	any one of: difficult to align pins/place pins accurately pins (too) thick lines too thick	1

Question	Answer	Marks
4	MP1 apparatus: rule or equivalent	1
	MP2 method: identify independent variable detail of deflection measurement and how it is measured	1
	MP3 repeat for new independent variable	1
	MP4 control variable: any variable appropriate to independent variable e.g. width of strip if thickness is the factor	1
	MP5 table: columns, with units, for independent variable, deflection	1
	MP6 analysis: compare readings in the table to see if change in factor produces change in deflection plot line graph (with axes specified)	1
	MP7 additional point (one from): at least 5 sets of data taken repeat each measurement <u>and take average</u> 2nd appropriate control variable stated repeat experiment for different variation (e.g. different mass if thickness is factor) use of fiducial aid	1