Cambridge IGCSE™

PHYSICS **0625/63**

Paper 6 Alternative to Practical **October/November 2024**

MARK SCHEME

Maximum Mark: 40

Published

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Question	Answer	Marks
1(a)(i)	θ_R = 22(°C)	**1**
1(a)(ii)	view temperature scale perpendicularly	**1**
1(b)	source of inaccuracy e.g: 75 cm^3 difficult to estimate with large graduations on beakers	**1**
1(c)	statement matching readings in table	**1**
	justification with comparison of temperature changes over 180 s, matching statement	**1**
1(d)	**one** suitable variable not referencing apparatus e.g.: volume of water, initial temperature, room / air / surrounding / environmental temperature	**1**
1(e)	x = 0.0917	**1**
	with unit °C / s	**1**
1(f)(i)	appropriate additional experiment: e.g. repeat for beaker B with lid / cover on top or with insulation on sides	**1**
1(f)(ii)	cooling rate $< x$	**1**
	with lid – cooling rate $< x/2$ OR with sides insulated – cooling rate $> x/2$ (but $< x$)	**1**

Question	Answer	Marks
2(a)	correct voltmeter symbol in parallel with resistor	**1**
2(b)	V_0 = 3.2(V)	**1**
2(c)	I = 0.18(A) recorded in Table 2.1	**1**
2(d)	graph:	
	• axes labelled with quantity and unit	**1**
	• appropriate scales (plots occupying at least ½ grid)	**1**
	• plots all correct to ½ small square and precise plots	**1**
	• well-judged line and thin line	**1**
2(e)(i)	G present and triangle method seen on graph	**1**
2(e)(ii)	R in range 4.8 (Ω) to 5.8 (Ω)	**1**
2(f)	valid practical source of inaccuracy, e.g: uncertain connection point on crocodile clip / resistance wire irregular / curved / not uniform / differing thickness along wire	**1**
2(g)	suitable improvement e.g: reduce e.m.f. of power supply / thinner resistance wire / use of additional series / protective resistor to reduce current	**1**

Question	Answer	Marks
3(a)(i)	normal correct	**1**
3(a)(ii)	$\theta_1 = 15° \pm 1°$	**1**
3(b)(i)	d = 3.5 (cm)	**1**
3(b)(ii)	separation not suitable and pin separation should be as large as possible / pin separation is too small / owtte	**1**
3(c)	all lines present and in correct positions	**1**
3(d)(i)	a = 6.1 (cm) and b = 4.2 (cm)	**1**
3(d)(ii)	n = 1.5 / ecf and no unit	**1**
3(e)(i)	$\alpha = 23° \pm 2°$	**1**
3(e)(ii)	statement matching results	**1**
	justification matching statement e.g. within limits of experimental accuracy / owtte with values to support	**1**
3(f)	**one** valid technique e.g.: thin lines / use sharp pencil, look at base of pins / keep pins vertical, thin pins	**1**

Question	Answer	Marks
4	**MP1** **apparatus:** stopwatch and metre ruler and protractor	**1**
	MP2 **method:** measure independent variable measure distance and time between points repeat for different angle	**1**
	MP3 **source of inaccuracy** (one from)**:** difficult to time at exact point, ramp surface not regular, trolley travels at an angle across slope	**1**
	MP4 **control variable** (one from)**:** distance from start to first point, distance between points	**1**
	MP5 **table:** columns for independent variable, time and speed, all with units	**1**
	MP6 **analysis:** compare readings of angle with speed or time plot line graph (with axes specified)	**1**
	MP7 **additional point** (one from)**:** at least 5 sets of data taken, repeat each measurement and take average, 2nd control variable stated,	**1**