



Cambridge IGCSE™

PHYSICS**0625/62**

Paper 6 Alternative to Practical

February/March 2022

MARK SCHEME

Maximum Mark: 40

Published

This mark scheme is published as an aid to teachers and candidates, to indicate the requirements of the examination. It shows the basis on which Examiners were instructed to award marks. It does not indicate the details of the discussions that took place at an Examiners' meeting before marking began, which would have considered the acceptability of alternative answers.

Mark schemes should be read in conjunction with the question paper and the Principal Examiner Report for Teachers.

Cambridge International will not enter into discussions about these mark schemes.

Cambridge International is publishing the mark schemes for the February/March 2022 series for most Cambridge IGCSE™, Cambridge International A and AS Level components and some Cambridge O Level components.

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

Question	Answer	Marks
1(a)	$l_0 = 2(0)$ (cm) and $l_s = 6.2$ (cm)	1
	both to 1 decimal place	1
1(b)	suitable method e.g. measure distance from bench at each end <u>and</u> check equal	1
1(c)(i)	graph: - axes labelled with quantity and unit - appropriate scales (occupying at least $\frac{1}{2}$ grid) - plots all correct to $\frac{1}{2}$ small square <u>and</u> precise plots - line well-judged <u>and</u> thin <u>and</u> extended to axis	1
1(c)(ii)	L read correctly from graph	1
1(c)(iii)	W_R in range 1.3 to 1.6 <u>and</u> with unit of N	1
1(d)(i)	suspend load from loop of thread / any other suitable method to avoid standing load over marks on rule	1
1(d)(ii)	valid source of uncertainty e.g. test load not exactly 1.0 N / spring extension not linear / metre rule not uniform	1

Question	Answer	Marks
2(a)	$\theta_R = 23\ (^{\circ}\text{C})$	1
2(b)(i)	2 suitable precautions e.g. view scale reading perpendicularly, wait until reading stops rising (at the start), avoid thermometer touching beaker	2
2(b)(ii)	s, $^{\circ}\text{C}$, $^{\circ}\text{C}$ all correct	1
2(c)	statement matching readings in table	1
	comparison of temperature changes over 180 s, matching statement (need to see <u>correct values</u> used in justification)	1
2(d)	suitable change e.g. use conducting material / metal for beaker B / support beaker A in beaker B so that there is an air gap underneath too	1
2(e)	2 suitable control variables e.g. initial temperature / volume of water / room temperature or other appropriate environmental condition	2
2(f)	$R = 0.0972$	1
	unit $^{\circ}\text{C} / \text{s}$	1

Question	Answer	Marks
3(a)(i)	normal correct	1
3(a)(ii)	$\theta_1 = 15 \pm 1(^{\circ})$	1
3(b)(i)	$d = 3(.0)$ (cm)	1
3(b)(ii)	separation not suitable and <u>pin</u> separation should be as large as possible / much larger / pin separation is too small / owtte	1
3(c)	all lines complete, straight and in correct position	1
3(d)(i)	$\beta = 18^{\circ} \pm 2^{\circ}$	1
3(d)(ii)	statement matching results	1
	justification <u>with</u> correct values matching statement	1
3(e)	two suitable precautions from: • use thin lines OR sharp pencil • view bottom of pins OR keep pins upright • ensure pins far apart • use thin pins	2
3(f)	difficult to align pins / place pins accurately, pins (too) thick mirror (too) thick	1

Question	Answer	Marks
4	MP1 factor: valid factor which may affect rate of temperature rise	1
	MP2 apparatus: <u>thermometer</u> and additional apparatus necessary to measure independent variable	1
	MP3 method: • measure independent variable • measure temperature (change) and / or time appropriate to procedure • repeat for new value of independent variable	1
	MP4 control variable: any significant variable (e.g. volume of water if current is the independent variable)	1
	MP5 table: columns, with <u>units</u> , for independent variable and dependent variable	1
	MP6 analysis: compare readings in the table to see if change in factor produces change in (rate of) temperature rise, plot (line) graph (with axes specified)	1
	MP7 additional point (one from): 2nd valid control variable stated, at least 5 sets of data taken, repeat each measurement <u>and</u> take average,	1