



Cambridge IGCSE™

PHYSICS

0625/63

Paper 6 Alternative to Practical

May/June 2022

MARK SCHEME

Maximum Mark: 40

Published

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

Question	Answer	Marks
1(a)	any valid method e.g. check equal distance between rule and bench at two places OR use set square/protractor between stand and rule OR line up with suitable (named) surface	1
1(b)(i)	$d = 15.2$ (cm)	1
1(b)(ii)	$F_P = 1.05$ (N) and $F_Q = 1.95$ (N)	1
1(c)	graph: • x-axis labelled with quantity and unit	1
	• suitable scales (plots occupying at least 3 large squares in both directions)	1
	• plots all correct to $\frac{1}{2}$ small square and precise plots	1
	• 2 well judged lines <u>and</u> thin lines	1
	• intersection at $d = 50.0$ cm to ± 1 small square	1
1(d)	F_0 present and W_R in range 1.8 (N) to 2.2 (N)	1
	W_R expressed to 2 or 3 significant figures <u>and</u> with unit of N	1
1(e)	forcemeter Q has zero error OR has not been set to 0 at start	1

Question	Answer	Marks
2(a)(i)	$\theta_R = 19$ (°C)	1
2(a)(ii)	suitable precaution e.g. line of sight perpendicular to scale OR wait until reading stops rising (at start)	1
2(b)	s, °C both correct	1

Question	Answer	Marks
2(c)	statement matching readings in table	1
2(d)(i)	comparison of temperature changes <u>over 180 s</u> , matching statement $x = 0.106$ unit °C / s	1
2(d)(ii)	value of x will be less/lower temperature <u>difference</u> between <u>beaker</u> and <u>room</u> is less and <u>values</u> from table referred to repeat experiment <u>with a lid</u> (calculate cooling rate) subtract from x to find cooling rate without transfer from sides OR a comparison of cooling rates	1
2(e)		1

Question	Answer	Marks
3(a)(i)	$f_1 = 3.1$ (cm) $F_1 = 15.5$ (cm)	1
3(a)(ii)	move <u>lens</u> backwards and forwards slowly OR move lens slowly	1
3(b)(i)	$h_o = 1.2$ (cm) <u>and</u> $h_i = 5.1$ (cm)	1
3(b)(ii)	hand gets in way of light mark on screen and measure later OR use screen with scale OR use translucent screen and measure at rear	1

Question	Answer	Marks
3(b)(iii)	$F_2 = 16.1$ or 16.2 (cm)	1
	F_2 expressed to 2 or 3 significant figures with matching unit	1
3(c)	statement matching results	1
	values within limits of experimental accuracy/owtte <u>and</u> values quoted in justification	1
3(d)	any one from: mark position of lens on holder clamp/place rule on bench ensure screen, lens and object all perpendicular view rule perpendicularly repeat <u>and</u> take average use darkened room/brighter light	1

Question	Answer	Marks
4	MP1 apparatus: voltmeter – correct symbol in parallel with LDR	1
	MP2 independent variable: statement identifying the independent variable e.g. light intensity, distance, current, voltage	1
	MP3 method: measure independent variable (e.g. metre rule to measure distance between lamp and LDR) measure p.d. and current calculate resistance of LDR	1
	MP4 repeat for new value of independent variable	1
	MP5 control variable: any variable appropriate to independent variable (e.g. distance from lamp to LDR if current through lamp is the independent variable, p.d., power, intensity)	1
	MP6 table: columns, with units, for independent variable, measured dependent variable and resistance (not just resistance without raw measurements)	1
	MP7 analysis: compare resistance values (in table) to see if change in independent variable produces change in resistance plot line graph (with axes specified)	1