



Cambridge Assessment International Education
Cambridge International General Certificate of Secondary Education

PHYSICS**0625/62**

Paper 6 Alternative to Practical

March 2019

MARK SCHEME

Maximum Mark: 40

Published

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

Question	Answer	Marks
1(a)(i)	$\theta = 23(^{\circ}) \pm 1^{\circ}$	1
1(a)(ii)	normal correct	1
1(b)	not at a suitable distance <u>and</u> should be far (as possible) from N	1
1(c)	all lines present, neat <u>and</u> labelled correctly	1
	$a = 10.2 \text{ (cm)} \pm 0.1 \text{ (cm)}$	1
1(d)	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, precise plots - well judged line <u>and</u> thin continuous line	1
1(e)	any suitable reason e.g.: ray has finite thickness – (difficult to mark position of ray precisely), reflecting surface of mirror at rear, inaccuracies have more effect for smaller angles, small variations in mirror angle have significant effect on 'a'	1
1(f)	reflect ray below NL at same angles <u>and</u> take averages	1

Question	Answer	Marks
2(a)	$\theta_R = 23 (^{\circ}\text{C})$	1
2(b)	s, $^{\circ}\text{C}$, $^{\circ}\text{C}$ all correct	1
	30, 60, 90, 120, 150, 180	1
2(c)	lid is more effective	1
	correct mention of comparative temperature change over 180 s, supporting conclusion	1
2(d)	additional experiment with both insulation and lid / neither insulation nor lid	1
	compare result of (previous) experiment with additional / only one factor changed in (each) comparison	1
2(e)(i)	$x_A = 0.081$	1
	$^{\circ}\text{C} / \text{s}$	1
2(e)(ii)	cooling more rapid at higher temperatures	1
	comparison of temperature difference over first 30 s and last 30 s supporting statement	1

Question	Answer	Marks
3(a)(i)	correct voltmeter symbol in parallel with P and Q	1
3(a)(ii)	$V = 2.6 \text{ (V)}$	1
	$I = 0.36 \text{ (A)}$	1
3(b)	correct units: V, A	1
3(c)(i)	correct calculations of R	1
	consistent 2 or consistent 3 sig. figs.	1
3(c)(ii)	correct calculations or R / I	1
3(d)	$R_{25} = 2.0 \text{ (}\Omega\text{)}$ and <u>clear</u> method seen e.g. proportion from other value(s) of R or use of R / I value(s)	1
3(e)	any one from: difficult to judge position of crocodile clip, difficult to measure wire to nearest mm, contact between wire and crocodile clip not precise, difficult to interpolate readings on meters between marks	1
3(f)	correct symbol for variable resistor	1
	in series and with all circuit elements in correct arrangement	1

Question	Answer	Marks
4	MP1 apparatus: means of measuring dependent variable (e.g. stop watch / rule / protractor)	1
	MP2 method (one from): workable means of providing air resistance (e.g. fix card to rod / bob), allow pendulum to swing, suitable measurement (e.g. period, amplitude)	1
	MP3 repeat for different value of independent variable (e.g. area of card)	1
	MP4 control variable (one from): length of pendulum, angle of release, mass of bob	1
	MP5 table: suitable clear format with column headings and units	1
	MP6 analysis: compare readings to see if change in air resistance produces change in dependent variable (e.g. change in area of card changes period) / plot graph	1

Question	Answer	Marks
4	MP7 additional point (one from): time 10 oscillations / swings (and calculate period), small angle of swing, at least 5 sets of data taken, repeat each measurement <u>and</u> take average, adjust mass of pendulum to compensate for changing mass of card, repeat with different length of pendulum / mass of bob, length measured to centre of bob / centre of gravity of pendulum, use of fiducial aid	1