Cambridge Assessment International Education

Cambridge IGCSE™

PHYSICS **0625/62**

Paper 6 Alternative to Practical **October/November 2020**

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.

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[Turn over

Question	Answer	Marks
1(a)	clear diagram showing a horizontal line (of set square across from spring to metre rule)	**1**
	drawn to <u>bottom</u> of spring	**1**
1(b)	14 / 14.5 / 15 (mm)	**1**
1(c)	graph	**1**
	axes correctly labelled and right way round	**1**
	all plots correct to ½ small square	**1**
	good line judgement, thin, continuous line	**1**
1(d)	intercept method clearly shown	**1**
	l_0 value correctly read to ½ small square	**1**
1(e)	$L - l_0$ correct calculation	**1**
	$L - l_0$ = 0 ± 2 (mm)	**1**

Question	Answer	Marks
2(a)	normal in centre of AB to 2 mm and at 90° and F and G correctly labelled	**1**
2(b)	P_1P_2 pin separation at least 5.0 cm	**1**
2(c)(i)	line through P_3 and P_4 correctly drawn and its end labelled K	**1**
2(c)(ii)	points H and J correctly labelled, and FH correctly drawn	**1**
2(c)(iii)	a = 1.3 ± 0.1 cm and b = 4.2 ± 0.1 cm	**1**
2(d)	candidate's θ correct to ± 2(°)	**1**
	unit	**1**
2(e)	any one from: thin lines / pins / sharp pencil view bases of pins ensure pins vertical / perpendicular to ray trace sheet use large pin separation (securely) attach the ray trace sheet to the surface	**1**
2(f)	maximum range 27(°) – 33(°)	**1**
2(g)	repeat experiment using more i values	**1**
	uses at least 4 i values	**1**

Question	Answer	Marks
3(a)(i)	V_1 = 1.4(0) (V)	1
3(a)(ii)	I = 0.56 (A)	1
3(a)(iii)	R_1 = 2.5(0) (Ω)	1
3(b)	R_3 = 0.82 (Ω)	1
3(c)	V, Ω, V	1
3(d)(i)	second box ticked	1
3(d)(ii)	correct justification using results	1
3(e)	use different lengths (of the wire sample)	1
	measure the p.d. and current / determine the resistance (of each length)	1
3(f)(i)	variable resistor / resistance / rheostat	1
3(f)(ii)	correct circuit symbol for a variable resistor	1

Question	Answer	Marks
4	**Apparatus:** **MP1** method of heating water **and** timer	**1**
	MP2 method: measure the temperature of the water and then place the ice cube(s) in the water and measure the time taken to melt	**1**
	MP3 method: melt repeat with water at different temperature(s)	**1**
	Key variables: Any two from: **MP4** mass / volume of ice cubes **MP5** number / size of ice cubes (per test) temperature of ice cubes / keep ice cubes in freezer volume / amount of water in the beaker room temperature amount of stirring	**2**
	Table: **MP6** table with columns for time / *t* and water temperature with correct units	**1**
	Conclusion: **MP7** explanation of how to reach a conclusion	**1**

Additional graph notes:

Note: The principle to apply here is 'could I draw a significantly better line, using these points, under examination conditions?' If the answer is definitely 'yes', do not award the mark.

Note: If candidate's scale consists of actual readings at equal intervals this will produce a perfect straight line! The only mark available in this case is the first (axes right way round and labelled) So maximum 1.

If axes are wrong way round, the other 3 marks are still available.