Cambridge Assessment International Education

Cambridge IGCSE™

PHYSICS **0625/61**

Paper 6 Alternative to Practical **May/June 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.

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[Turn over

Question	Answer	Marks
1(a)(i)	21.3 (cm)	1
	22.8 (cm) (or the other way round)	1
	l_0 = 1.5 (cm)	1
1(a)(ii)	set square method clearly shown	1
1(b)	correct calculation of *k*; P divided by candidate's e_1 quoted to 2 or more significant figures	1
	N / cm	1
1(c)	e_5 = 4.8 (cm)	1
	k given to 2 significant figures	1
1(d)	statement to match results and explanation to match statement	1
1(e)(i)	additional load(s)	1
1(e)(ii)	plot a graph OR take an average	1

Question	Answer	Marks
2(a)	23 (°C)	**1**
2(b)	s, °C	**1**
2(c)(i)	view scale / value / water level at right angles / perpendicularly	**1**
	to bottom of meniscus	**1**
2(c)(ii)	measuring cylinder can only be read to nearest 1 or 2 cm^3. OR to nearest cm^3 means you are measuring the volume to 3 significant figures (which is sufficient)	**1**
2(d)(i)	$R_1 = 0.15$	**1**
	with unit °C / s	**1**
2(d)(ii)	$R_2 = 0.05$	**1**
2(e)	yes; with numbers given, starting from a higher temperature the cooling rate is 0.15 °C / s but starting from a lower temperature the cooling rate is 0.05 °C / s	**1**
2(f)	lid	**1**
	insulation	**1**

Question	Answer	Marks
3(a)	a position in series with power supply, ammeter and **BC**	**1**
3(b)	I = 0.38 (A)	**1**
3(c)	V = 2.6	**1**
3(d)(i)	R = 6.84	**1**
3(d)(ii)	V, Ω	**1**
3(e)	graph: axes correctly labelled with quantity and unit and right way round	**1**
	suitable scales	**1**
	all plots correct to ½ small square	**1**
	good line judgement, thin, continuous line	**1**
3(f)	method shown clearly on graph	**1**
	R value correct to nearest ½ small square	**1**

Question	Answer	Marks
4	**MP1** **identify variable under test** either distance between supports / length of beam OR composition of beam (proportion of sand / cement)	**1**
	MP2 increase load until beam breaks (and record load)	**1**
	MP3 repeat for (at least 2 more) different beams or (2 more) different lengths	**1**
	MP4 **constant variable** identified (in relation to variable under test) distance between supports position of load composition of beam (if not independent variable) same length of beam (if not independent variable)	**1**
	MP5 **table** with columns for distance / length or composition, and (maximum) load with units required for load and distance / length	**1**
	MP6 **conclusion** compare breaking load with variable under test OR plot a graph of load against length	**1**
	MP7 **additional point** any **one** from: at least 5 sets of results repeats of individual tests and average (rough initial test then) adding small loads near breaking load carefully place loads on beam	**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.