Cambridge International Examinations
Cambridge International General Certificate of Secondary Education

PHYSICS **0625/62**

Paper 6 Alternative to Practical **May/June 2017**

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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Question	Answer	Marks
1(a)(i)	V = 0.8 (V)	**1**
	I = 0.65 A both units correct	**1**
1(a)(ii)	R = 1.2(3) (Ω)	**1**
1(b)(i)	1.31(Ω) (e.c.f.)	**1**
1(b)(ii)	length (directly) proportional to resistance/$l \propto R$/$l = kR$	**1**
1(c)	second box down to be ticked	**1**
1(d)	different heating effects on wires/wires may be at different temperatures different interpolation of readings between marks on meters/difficult to read the meter (or ammeter/voltmeter/current/voltage) accurately difficult to measure length of wire to nearest mm/to judge the position of the sliding contact cell may run down/power of cell may be less **Any 2 × 1 mark each**	**2**
	Total:	**8**

Question	Answer	Marks
2(a)	normal in centre of AB at the top face	**1**
	FE at 40° to the left of the normal	**1**
	P_1 P_2 distance at least 5 cm	**1**
2(b)	P_3 P_4 straight line and K correctly marked on CD	**1**
2(c)	$\alpha = 40 \pm 2$	**1**
	$x = 17 \pm 2$ mm	**1**
2(d)	statement is a definite YES or NO, depending on candidate's measured value of x justification to include the idea of within the limits of experimental accuracy/(very)close/almost equal etc. if YES	**1**
	justification to include the idea of outside the limits of experimental accuracy/too far apart/too different etc. if NO	**1**
2(e)	any one from: large pin separation/pins must be >5 cm apart ensure pins vertical/upright/perpendicular to the paper view bases of pins use thin pencil lines/thin pins	**1**
	Total:	**9**

Question	Answer	Marks
3(a)	50 – 200 cm inclusive	**1**
3(b)	move (the screen) slowly/carefully back and forth until the best position is found	**1**
3(c)	9.966/9.97/10 cm	**1**
	answer to 2/3 significant figures (regardless of value – even if incorrect)	**1**
3(d)	upside down/magnified/fainter/coloured	**1**
3(e)	A, D, F	**3**
	Total:	**8**

Question	Answer	Marks
4(a)	graph: axes correctly labelled	**1**
	suitable scales	**1**
	all plots correct to ½ small square	**1**
	good line judgement, thin, continuous line	**1**
4(b)	expect NO line does not pass through origin	**1**
4(c)	6,40,34	**1**
	consistent units of N cm	**1**
4(d)	have not taken the weight of the rule/moment of the weight into account/not realised that $Qb + mX = Pa$ /the pivot is not at the centre (of mass) of the rule	**1**
	Total:	**8**

Question	Answer	Marks
5	method to include:	
MP1	measurements of temperature of hot water over a period of time/measurement of temperature at start and end of a specified cooling time /measurement of time for a specified temperature drop	**1**
MP2	repeat using variety of fan speeds (blowing air over water surface)	**1**
MP3 MP4	two from: room temperature initial/starting temperature of hot water volume/mass/amount of (hot) water distance of beaker to fan for each speed setting time of cooling (for a fixed temperature drop) temperature drop (for a fixed time) same beaker size/material	**2**
MP5	table with columns for fan speed, time and temperature with units in the table headings (not the body of the table) for time and temperature, but fan speed units not required	**1**
MP6	compare readings <u>to find out which fan speed</u> produces the greatest temperature drop / takes least time **or** plot a graph of temperature against time	**1**
MP7	in the same time / for same temperature drop **or** steepest gradient gives the fastest rate of cooling	**1**
	Total:	**7**