Cambridge International Examinations
Cambridge International General Certificate of Secondary Education

PHYSICS **0625/53**

Paper 5 Practical Test **May/June 2017**

MARK SCHEME

Maximum Mark: 40

Published

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Question	Answer	Marks
1(a)	5 *I* values, all increasing	1
	all < 5.00 A and to 2dp at least	1
1(b)	graph: axes labelled with quantity and unit	1
	appropriate scales (plots occupying at least ½ grid)	1
	plots all correct to ½ small square	1
	Well-judged straight line and thin line, precise plots	1
1(c)(i)	*M* present and triangle method seen on graph	1
1(c)(ii)	*R* in range 0.5 to 4.0 Ω	1
	2 or 3 sig figs and unit = Ω	1
1(d)	suitable reason: e.g.: wire becomes too hot, current exceeds full scale deflection(owtte) of meter/becomes too large	1
1(e)	correct symbol for variable resistor (rectangle with strike-through arrow only)	1
	Total:	**11**

Question	Answer	Marks
2(a)	sensible value for W_1 (0.7 to 1.3 N)	1
2(b)(i)	sensible value for V_1 (140 to 160 cm^3)	1
2(b)(ii)	line of sight perpendicular	1
	to bottom of meniscus	1
2(c)	$W_2 < W_1$ <u>and</u> $V_2 > V_1$	1
2(d)	correct calculation of ρ_1	1
	unit g / cm^3	1
2(e)	$m_1 > m_2$ by between 100 g and 200 g	1
2(f)	ρ_2 <u>and</u> ρ_1 in range 0.9 to 1.1	1
2(g)	appropriate cause of inaccuracy: e.g.: • some water still in empty measuring cylinder • water spilled, splashed when putty put in water water drops on putty when removed • air bubbles on putty	1
	suitable improvement: e.g.: • measure m_2 at start (when cylinder dry) • measure new volume in Method OR refill to correct value • shake putty to remove air / smooth surface to minimise bubbles	1
	Total:	**11**

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Question	Answer	Marks
3(a)	normal correct and $\theta = 30° \pm 1°$	1
3(b)	pin separation $\geqslant$ 5 cm	1
3(c)(i)	first set of lines in correct place	1
3(c)(ii)	*a* and *b* lengths correct	1
	n calculation correct	1
	in range 1.3 to 1.7 and no unit	1
3(d)	all lines present and neat	1
3(e)(i)	$\alpha = 30° \pm 3°$	1
3(e)(ii)	statement matching results	1
	justification using values and matching the statement ('within limits of experimental Accuracy'/owtte)	1
3(f)	difficulty in aligning pins/placing pins accurately, pins (too) thick	1
	Total:	**11**

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Question	Answer	Marks
4 MP1	**apparatus** beaker with insulation and thermometer and stopclock (or alternative) mentioned	1
MP2	**method** pour hot water into container measure temperature of hot water over period of time	1
MP3	repeat for additional layers	1
MP4	**results:** suitable table/graph/cooling curve	1
MP5	**control variables** any pair from: same initial temperature, same volume of water, same size/material/thickness of beaker, same thickness of each layer,	1
MP6 MP7	**additional points** any 2 from: how cooling rate calculated/how to compare cooling curves, read thermometer perpendicularly, thermometer at same depth (for repeat) thermometer not touching beaker, stir before reading thermometer, use of lid, minimum of 5 different thicknesses of insulation, repeat experiment with different sized beakers/different amount of water, sensible amount of water (50 cm^3 to 500 cm^3)	2
	Total:	7