Cambridge International Examinations
Cambridge International General Certificate of Secondary Education

PHYSICS **0625/63**

Paper 6 Alternative to Practical **October/November 2016**

MARK SCHEME

Maximum Mark: 40

Published

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Question	Answer	Mark
1(a)(i)	θ = 82(.0), 80(.0)	**1**
1(a)(ii)	units all correct (symbols or words) *t* values all present (30, 60, 90, 120, 150 and 180)	**1** **1**
1(b)	any 2 appropriate precautions: e.g. viewing perp. to thermometer scale (to avoid parallax) stir before reading keep thermometer at same level / not touching beaker walls wait until reading stops rising at the start	**2**
1(c)(i)	Conclusion <u>and</u> explicit quoting of figures from the table which relate to the *whole* 180 s period (eg 15.0 and 9.5 °C, or 5.5 °C more) statement that B cools more <u>quickly</u> / its <u>temperature</u> drops <u>faster</u> / its temperature falls more <u>in the same time</u>	**1** **1**
1(c)(ii)	any suitable improvement to apparatus relating to comparison: e.g. insulate sides, use plastic beaker, stand on mat matching explanation: e.g. thermal energy only escapes from surface, surface area only variable changed, less transfer of thermal energy / heat by sides appropriate effect on values of θ: e.g. all higher	**1** **1** **1**

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Question	Answer	Mark
1(d)	any appropriate factor: e.g. volume of water, initial temperature of water, similar ratio of surface areas, type / material / size of beaker, room temperature	**1**
	Total	**11**

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Question	Answer	Mark
2(a)(i)	$h_O = 1.5$ (cm) $h_I = 4.0$ (cm)	**1** **1**
2(a)(ii)	$M = 2.7$ (or ecf) and no unit for M	**1**
2(a)(iii)	Answer given to 2 / 3 sig figs and with appropriate unit Value given for f_1 rounds to 14.5 or 14.6 (cm)	**1** **1**
2(a)(iv)	any appropriate difficulty: e.g. hand / ruler in way of image matching improvement: e.g. use translucent screen and view from behind use transparent ruler, fix ruler / grid to screen	**1** **1**
2(b)(i)	distance present, and $v = 25(.0)$ (cm)	**1**
2(b)(ii)	f_2 present (expect 15.4 (cm)) and statement matching results justification matching correct statement ('within limits of experimental accuracy' / owtte)	**1** **1**
2(c)	any suitable precaution: e.g. dark room / bright light (centre of) lens and object same height (above bench), lens / object / screen perpendicular (any one will suffice), ruler fixed / placed on bench, mark centre of lens on holder repeat with different values of u / different sizes of object	**1**
	Total	**11**

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Question	Answer	Mark
3(a)	Four correct *I* values (0.12, 0.15, 0.17, 0.19 and 0.21) present The fifth one is also correct	**1** **1**
3(b)	correct calculations of *R* (4.2, 6.7, 8.8, 10.5, 11.9) or ecf from **(a)**	**1**
3(c)	graph: axes correct way round, labelled with quantity and unit appropriate scales (plots occupying at least ½ grid) plots all correct to ½ small square well-judged line and thin line, precise plots	 **1** **1** **1** **1**
3(d)	simple statement matching candidate's line (e.g. resistance increases with p.d.) qualified (e.g. changes less rapidly for greater p.d. values)	**1** **1**
3(e)	correct symbol for variable resistor (rectangle with strike-through arrow only) in correct series circuit	**1** **1**
	Total	**11**

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Question	Answer	Mark
4	apparatus – workable arrangement	**1**
	how applied force is measured	**1**
	suitable table for results / plot a bar graph	**1**
	how to conclude which is strongest	**1**
	one suitable control variable: e.g. same width of sample same thickness / weight / length of paper all samples fixed in same way	**1**
	any 2 from: 2nd control variable, force applied smoothly / no jerking ensure no tears before applying force repeat for each type of sample / repeat with samples of different widths soft mat under weights (to cushion fall) / clamp stand to bench add weight of lower block to value of load any other suitable precaution	**2**
	Total	**7**

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