



Cambridge Assessment International Education
Cambridge International General Certificate of Secondary Education

PHYSICS

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Paper 6 Alternative to Practical

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MARK SCHEME

Maximum Mark: 40

Published

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Question	Answer	Marks
1(a)	21(.0) (°C)	1
1(b)	s, °C, °C all correct	1
	30, 60, 90, 120, 150, 180	1
1(c)	appropriate precaution e.g. avoidance of parallax (only if explained) / wait until reading stops rising (at start)	1
1(d)(i)	beaker with lid A (has a greater rate of cooling)	1
	correct mention of comparative temperature change over <u>0 to 180 s</u>	1
1(d)(ii)	any suitable change to <u>apparatus</u> relating to comparison e.g. insulate sides / stand on mat use plastic beaker thicker lid use of fan use wider beaker	1
	matching explanation e.g. thermal energy only escapes from surface less transfer of thermal energy by sides / bottom less conduction through lid larger surface area (for evaporation to occur)	1
1(e)	straight line	1
	through the origin	1
1(f)	any appropriate factor e.g. volume of water initial temperature of water (same) lids type / material / size of beaker room temperature / appropriate environmental factor	

Question	Answer	Marks
2(a)	correct voltmeter symbol in parallel with X	1
2(b)(i)	$I = 0.86 \text{ (A)}$	1
	$V = 0.9 \text{ (V)}$	1
2(b)(ii)	Ω	1
	A, V	1
2(c)	correct calculations of P (0.77 / ecf, 0.94, 0.58(W))	1
	consistent 2 or consistent 3 significant figures	1
2(d)	increases (at first)	1
	to a maximum AND then decreases	1
2(e)	any 2 additions from: draw a graph; different / more resistors / values of resistance / greater range of values for resistance; use (at least) 5 sets of values for resistance	2

Question	Answer	Marks
3(a)	$h_o = 1.4$ (cm)	1
3(b)(i)	$h_f = 4.5$ (cm)	1
3(b)(ii)	$N = 0.31$ / ecf	1
3(c)	graph:	
	axes labelled correct orientation, with quantity and unit	1
	appropriate scales (plots occupying at least $\frac{1}{2}$ grid)	1
	plots all correct to $\frac{1}{2}$ small square and precise plots	1
	well judged line and thin line	1
3(d)	G in range 14.0 to 17.0	1
	triangle method seen on graph occupying at least half line	1
3(e)	any inherent difficulty e.g. hand / ruler in way of image OR screen can move (when measuring)	1
	matching improvement to <u>apparatus</u> e.g. use translucent screen and view from behind OR fix ruler / grid to screen OR clamp screen in place	1

Question	Answer	Marks
4	Apparatus: forcemeter, (10 g and 100 g) masses / masses only (if clear they are used to change the mass of the block and as weights to the block via the pulley)	1
	Diagram: block, workable means of pulling and measuring force	1
	Method (2): measure force required to make block slide / find mass (on pulley) required to make block slide	1
	repeat for new value of mass	1
	Precautions: any one from: same surface to slide on / repeat each measurement and take average / same angle of pulling force	1
	Graph: mass on block vs force (needed to slide)	1
	Any additional point: at least 5 sets of data taken / keep force horizontal / add mass of block to load / extra precaution	1