



Cambridge IGCSE™

PHYSICS**0625/63**

Paper 6 Alternative to Practical

October/November 2023

MARK SCHEME

Maximum Mark: 40

Published

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Mark schemes should be read in conjunction with the question paper and the Principal Examiner Report for Teachers.

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This document consists of **8** printed pages.

Question	Answer	Marks
1(a)(i)	$m = 143(\text{g})$	1
1(a)(ii)	$\rho_1 = 1.32$	1
	unit: g / cm^3	1
1(b)(i)	$V_2 = 154(\text{cm}^3)$	1
1(b)(ii)	$\rho_2 = 2.65$	1
	ρ_2 and ρ_1 to consistent 2 or consistent 3 significant figures	1
1(b)(iii)	arrow or line perpendicular to scale	1
1(c)(i)	Method 1 – reference to idea of volume being larger than volume of particles in sample / (idea of) gaps between the grains	1
1(c)(ii)	Method 2 – water displaces air (owtte) and (calculated) volume is actually that of particles / (idea of) gaps filled with water	1
1(d)	two appropriate sources of inaccuracy from: sand surface not flat / top pan balance only to nearest gram / measuring cylinder graduations too large	2

Question	Answer	Marks
2(a)	$\theta_1 = 18(^{\circ}\text{C})$	1
2(b)	suitable precaution e.g. view scale reading perpendicularly, wait until readings stops rising (at start), avoid thermometer touching beaker	1
2(c)	statement matching readings in table	1
	comparison of temperature changes over 180 s, matching statement, need to see both 16.5 and 10	1
2(d)	$R = 0.092$ OR 0.09 OR 0.0917	1
	unit $^{\circ}\text{C/s}$	1
2(e)	Two suitable controls from: volume of water, initial temperature material of beaker / thickness of beaker / surface area of beaker	2
2(f)(i)	θ_1 not constant / higher than θ_2 at the end	1
	value of R reduced / decreases / low(er) / small(er)	1
2(f)(ii)	large(r) volume of water surrounding beaker A / use of constant temperature water bath	1

Question	Answer	Marks
3(a)	move screen slowly	1
	backwards and forwards	1
3(b)	$u/v = 0.33$	1
3(c)	graph: - axes labelled with quantity and unit - appropriate scales (plots occupying at least $\frac{1}{2}$ grid) - plots all correct to $\frac{1}{2}$ small square <u>and</u> precise plots - well-judged line <u>and</u> thin line	1
3(d)(i)	u_o in range 13 to 18(cm) triangle method seen on <u>graph</u>	1
3(d)(ii)	f to 2 or 3 significant figures with unit – cm	1
3(e)	mark base of lens/ clamp rule to bench/ lens and screen upright/ darkened room	1

Question	Answer	Marks
4	MP1 apparatus: correct variable resistor symbol in series	1
	MP2 method: measure current OR measure AMPS measure light intensity	1
	MP3 repeat for different current OR different resistance	1
	MP4 control variable (one from): ambient light level OWTTE distance from lamp to light meter	1
	MP5 table: columns for current (with unit) and light intensity	1
	MP6 analysis: compare readings in a table to see if change in current produces change in light intensity/ plot line graph with axes specified or draw labelled axes	1
	MP7 additional point (one from): at least 5 sets of data taken, repeat each measurement <u>and</u> take average, 2nd control variable stated,	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 marks available in this case are the first (axes right way round and labelled) So maximum 1.
If axes are wrong way round, the other 3 marks are still available.