

A₁ b measured at at least 3 places A₂ Average value of b: 2.20 ≤ b ≤ 2.50 cm, recorded to 2 pd in cm ½ + ½ A₃ d measured at at least 3 places A₄ Average value of d: 0.40 ≤ b ≤ 0.60 cm, recorded to 2 pd in cm ½ + ½ A₅ C is at 49.5 − 50.5 cm mark, recorded to 1 dp in cm ½ + ½ A₆ P₀ recorded to 1 dp in cm A₂ H½ A₆ P₀ recorded to 1 dp in cm New position of pointer recorded to 1 dp in cm ½ + ½ A₆ Correctly calculated to 3 decimal places in metres ½ + ½ A₆ Correct substitution into the expression − everything in SI units E correctly calculated (1.00 ≤ E ≤ 2.50) x 10¹⁰ N m²² to 2 or 3 sig. figures 1 + ½ B₁ Columnar table of: l, P₀, P, y,logl and log y @⅓ B₂ Correct units: (m), (cm), (cm), (m), -, - @⅓ B₃ Initial positions of pointer, P₀, recorded to 1 dp in cm (or to 3 dp in m) @⅓ B₃ Values of y correctly calculated to 3 dp in m, decreasing @⅓ Values of logl read to 3 dp: -0.046, -0.097, -0.155, -0.222, -0.301, -0.398, -0.523 B₃ @⅓ Values of logy read to 3 dp: -0.046, -0.097, -0.155, -0.222, -0.301, -0.398, -0.523 B₃ Gales: Uniform, each spanning at least ⅓ pg, demarcations marked, starting values C₄ indicated ⅓ + ⅓ Scales: Uniform, each spanning at least ⅓ pg, demarcations marked, starting values C₄ indicated ⅓ + ⅓		QUESTION 1	
A2 Average value of b: $2.20 \le b \le 2.50$ cm, recorded to 2 pd in cm $\frac{1}{2} + \frac{1}{2}$ d measured at at least 3 places A4 Average value of d: $0.40 \le b \le 0.60$ cm, recorded to 2 pd in cm $\frac{1}{2} + \frac{1}{2}$ A5 C is at $49.5 - 50.5$ cm mark, recorded to 1 dp in cm $\frac{1}{2} + \frac{1}{2}$ A6 Po recorded to 1 dp in cm A7 New position of pointer recorded to 1 dp in cm $\frac{1}{2} + \frac{1}{2}$ A8 x correctly calculated to 3 decimal places in metres $\frac{1}{2} + \frac{1}{2}$ A9 Correct substitution into the expression – everything in SI units E correctly calculated $(1.00 \le E \le 2.50) \times 10^{10} \text{ N m}^{-2}$ to 2 or 3 sig. figures $1 + \frac{1}{2} \times 10^{10} \times 10^{$	Code	Points to score	Marks
A ₃ d measured at at least 3 places A ₄ Average value of d: 0.40 ≤ b ≤ 0.60 cm, recorded to 2 pd in cm ½ + ½ A ₅ C is at 49.5 – 50.5 cm mark, recorded to 1 dp in cm ½ + ½ A ₆ P _o recorded to 1 dp in cm New position of pointer recorded to 1 dp in cm ½ + ½ A ₈ x correctly calculated to 3 decimal places in metres ½ + ½ A ₉ Correct substitution into the expression – everything in SI units A ₁₀ E correctly calculated (1.00 ≤ E ≤ 2.50) x 10 ¹⁰ N m ⁻² to 2 or 3 sig. figures 1 + ½ B ₁ Columnar table of: l, P _o , P, y,logl and log y @¼ B ₂ Correct units: (m), (cm), (cm), (m), -, - @¼ B ₃ Initial positions of pointer, P _o , recorded to 1 dp in cm (or to 3 dp in m) @½ B ₄ Final positions of pointer, P, recorded to 1 dp in cm (or to 3 dp in m) @½ B ₅ Values of y correctly calculated to 3 dp in m, decreasing @¼ B ₆ Values of logl read to 3 dp: -0.046, -0.097, -0.155, -0.222, -0.301, -0.398, -0.523 B ₇ @¼ Values of logy read to 3 dp @¼ C ₁ Title of the graph: A graph of logy against log! C ₂ Axes: Each drawn with an arrow in the increasing direction, each labeled with quantity and unit½ + ½ Scales: Uniform, each spanning at least ½ pg, demarcations marked, starting values C ₄ indicated	A_1	b measured at at least 3 places	1/2
A4 Average value of d: $0.40 \le b \le 0.60$ cm, recorded to 2 pd in cm $\frac{1}{2} + \frac{1}{2}$ A5 C is at $49.5 - 50.5$ cm mark, recorded to 1 dp in cm $\frac{1}{2} + \frac{1}{2}$ A6 P ₀ recorded to 1 dp in cm A7 New position of pointer recorded to 1 dp in cm $\frac{1}{2} + \frac{1}{2}$ A8 x correctly calculated to 3 decimal places in metres $\frac{1}{2} + \frac{1}{2}$ A9 Correct substitution into the expression – everything in SI units A10 E correctly calculated $(1.00 \le E \le 2.50) \times 10^{10} \text{ N m}^2$ to 2 or 3 sig. figures $1 + \frac{1}{2} \times 10^{10} \times 10^$	A_2	Average value of b: $2.20 \le b \le 2.50$ cm, recorded to 2 pd in cm $\frac{1}{2} + \frac{1}{2}$	1
A ₅ C is at 49.5 – 50.5 cm mark, recorded to 1dp in cm A ₆ P _o recorded to 1 dp in cm A ₇ New position of pointer recorded to 1 dp in cm A ₈ x correctly calculated to 3 decimal places in metres A ₉ Correct substitution into the expression – everything in SI units A ₁₀ E correctly calculated (1.00 ≤ E ≤ 2.50) x 10 ¹⁰ N m ⁻² to 2 or 3 sig. figures 1 + 1/2 B ₁ Columnar table of: l, P _o , P, y,logl and log y B ₂ Correct units: (m), (cm), (cm), (m), -, - B ₃ Initial positions of pointer, P _o , recorded to 1 dp in cm (or to 3 dp in m) B ₄ Final positions of pointer, P, recorded to 1 dp in cm (or to 3 dp in m) B ₇ Values of y correctly calculated to 3 dp in m, decreasing B ₈ Values of logl read to 3 dp: -0.046, -0.097, -0.155, -0.222, -0.301, -0.398, -0.523 B ₇ @½ C ₁ Title of the graph: A graph of logy against log1 C ₂ Axes: Each drawn with an arrow in the increasing direction, each labeled with quantity and unit	A_3	d measured at at least 3 places	1/2
A6 Po recorded to 1 dp in cm A7 New position of pointer recorded to 1 dp in cm A8 x correctly calculated to 3 decimal places in metres A9 Correct substitution into the expression – everything in SI units A10 E correctly calculated (1.00 ≤ E ≤ 2.50) x 10 ¹⁰ N m ⁻² to 2 or 3 sig. figures B1 Columnar table of: l, Po, P, y,logl and log y B2 Correct units: (m), (cm), (cm), (m), -, - B3 Initial positions of pointer, Po, recorded to 1 dp in cm (or to 3 dp in m) B4 Final positions of pointer, P, recorded to 1 dp in cm (or to 3 dp in m) B5 Values of y correctly calculated to 3 dp in m, decreasing B6 Values of logl read to 3 dp: -0.046, -0.097, -0.155, -0.222, -0.301, -0.398, -0.523 B7 @14 Values of logy read to 3 dp @1/4 C1 Title of the graph: A graph of logy against log l C2 Axes: Each drawn with an arrow in the increasing direction, each labeled with quantity and unit	A_4	Average value of d: $0.40 \le b \le 0.60$ cm, recorded to 2 pd in cm $\frac{1}{2} + \frac{1}{2}$	1
A7 New position of pointer recorded to 1 dp in cm A8 x correctly calculated to 3 decimal places in metres A9 Correct substitution into the expression – everything in SI units A10 E correctly calculated (1.00 ≤ E ≤ 2.50) x 10¹¹0 N m⁻² to 2 or 3 sig. figures 1 + ½ B1 Columnar table of: l, P₀, P, y,logl and log y B2 Correct units: (m), (cm), (cm), (m), -, - B3 Initial positions of pointer, P₀, recorded to 1 dp in cm (or to 3 dp in m) B4 Final positions of pointer, P, recorded to 1 dp in cm (or to 3 dp in m) B5 Values of y correctly calculated to 3 dp in m, decreasing B6 Values of logl read to 3 dp: -0.046, -0.097, -0.155, -0.222, -0.301, -0.398, -0.523 B7 @⅓ Values of logy read to 3 dp @⅓ C1 Title of the graph: A graph of log y against log l C2 Axes: Each drawn with an arrow in the increasing direction, each labeled with quantity and unit C3 Scales: Uniform, each spanning at least ½ pg, demarcations marked, starting values C4 indicated ½ + ½ 3 3 indicated ½ + ½ 3 3 indicated	A_5	C is at $49.5 - 50.5$ cm mark, recorded to 1dp in cm $\frac{1}{2} + \frac{1}{2}$	1
A ₈ x correctly calculated to 3 decimal places in metres A ₉ Correct substitution into the expression – everything in SI units A ₁₀ E correctly calculated (1.00 ≤ E ≤ 2.50) x 10 ¹⁰ N m ⁻² to 2 or 3 sig. figures 1 + ½ B ₁ Columnar table of: l, P _o , P, y,logl and log y B ₂ Correct units: (m), (cm), (cm), (m), -, - B ₃ Initial positions of pointer, P _o , recorded to 1 dp in cm (or to 3 dp in m) B ₄ Final positions of pointer, P, recorded to 1 dp in cm (or to 3 dp in m) B ₅ Values of y correctly calculated to 3 dp in m, decreasing B ₆ Values of logl read to 3 dp: -0.046, -0.097, -0.155, -0.222, -0.301, -0.398, -0.523 B ₇ @½ Values of logy read to 3 dp @½ C ₁ Title of the graph: A graph of logy against log l C ₂ Axes: Each drawn with an arrow in the increasing direction, each labeled with quantity and unit C ₁ Title of the graph: A graph of logy against log l C ₂ Scales: Uniform, each spanning at least ½ pg, demarcations marked, starting values C ₄ indicated ½ + ½	A_6	Po recorded to 1 dp in cm	1/2
A ₉ Correct substitution into the expression – everything in SI units E correctly calculated (1.00 ≤ E ≤ 2.50) x 10 ¹⁰ N m ⁻² to 2 or 3 sig. figures 1 + ½ B ₁ Columnar table of: <i>l</i> , P _o , P, y,log <i>l</i> and log y @½ B ₂ Correct units: (m), (cm), (cm), (m), -, - @¼ B ₃ Initial positions of pointer, P _o , recorded to 1 dp in cm (or to 3 dp in m) @½ B ₄ Final positions of pointer, P, recorded to 1 dp in cm (or to 3 dp in m) @½ B ₅ Values of y correctly calculated to 3 dp in m, decreasing @¼ B ₆ Values of log <i>l</i> read to 3 dp: -0.046, -0.097, -0.155, -0.222, -0.301, -0.398, -0.523 B ₇ @¼ Values of logy read to 3 dp @¼ C ₁ Title of the graph: A graph of log y against log l C ₂ Axes: Each drawn with an arrow in the increasing direction, each labeled with quantity and unit	A ₇	New position of pointer recorded to 1 dp in cm $\frac{1}{2} + \frac{1}{2}$	1
A ₁₀ E correctly calculated (1.00 ≤ E ≤ 2.50) x 10 ¹⁰ N m ⁻² to 2 or 3 sig. figures 1 + ½ B ₁ Columnar table of: l, P ₀ , P, y,log l and log y @½ B ₂ Correct units: (m), (cm), (cm), (m), -, - @½ B ₃ Initial positions of pointer, P ₀ , recorded to 1 dp in cm (or to 3 dp in m) @½ B ₄ Final positions of pointer, P, recorded to 1 dp in cm (or to 3 dp in m) @½ B ₅ Values of y correctly calculated to 3 dp in m, decreasing @¼ B ₆ Values of log l read to 3 dp: -0.046, -0.097, -0.155, -0.222, -0.301, -0.398, -0.523 B ₇ @¼ Values of logy read to 3 dp @¼ C ₁ Title of the graph: A graph of log y against log l C ₂ Axes: Each drawn with an arrow in the increasing direction, each labeled with quantity and unit	A_8	x correctly calculated to 3 decimal places in metres $\frac{1}{2} + \frac{1}{2}$	1
B ₁ Columnar table of: <i>l</i> , P ₀ , P, y,log <i>l</i> and log y @½ B ₂ Correct units: (m), (cm), (m), -, - @½ B ₃ Initial positions of pointer, P ₀ , recorded to 1 dp in cm (or to 3 dp in m) @½ B ₄ Final positions of pointer, P, recorded to 1 dp in cm (or to 3 dp in m) @½ B ₅ Values of y correctly calculated to 3 dp in m, decreasing @¼ Values of log <i>l</i> read to 3 dp: -0.046, -0.097, -0.155, -0.222, -0.301, -0.398, -0.523 B ₇ @¼ Values of logy read to 3 dp @½ C ₁ Title of the graph: A graph of logy against log l C ₂ Axes: Each drawn with an arrow in the increasing direction, each labeled with quantity and unit½ +½ C ₃ Scales: Uniform, each spanning at least ½ pg, demarcations marked, starting values C ₄ indicated ½ +½	A_9	Correct substitution into the expression – everything in SI units	1/2
B ₁ Columnar table of: <i>l</i> , P ₀ , P, y,log <i>l</i> and log y	A_{10}	E correctly calculated (1.00 $\leq~E \leq~2.50)~x~10^{10}~N~m^{2}$ to 2 or 3 sig. figures $-1~+$	11/2
B ₁ Columnar table of: <i>l</i> , P _o , P, y,log <i>l</i> and log y @¼ B ₂ Correct units: (m), (cm), (cm), (m), -, - @¼ B ₃ Initial positions of pointer, P _o , recorded to 1 dp in cm (or to 3 dp in m) @½ B ₄ Final positions of pointer, P, recorded to 1 dp in cm (or to 3 dp in m) @½ B ₅ Values of y correctly calculated to 3 dp in m, decreasing @¼ B ₆ Values of log <i>l</i> read to 3 dp: -0.046, -0.097, -0.155, -0.222, -0.301, -0.398, -0.523 B ₇ @¼ Values of logy read to 3 dp @¼ C ₁ Title of the graph: A graph of log y against log l C ₂ Axes: Each drawn with an arrow in the increasing direction, each labeled with quantity and unit½ +½ C ₃ Scales: Uniform, each spanning at least ½ pg, demarcations marked, starting values C ₄ indicated ½ +½		1/2	
B2 Correct units: (m), (cm), (cm), (m), -, - @½ B3 Initial positions of pointer, Po, recorded to 1 dp in cm (or to 3 dp in m) @½ B4 Final positions of pointer, P, recorded to 1 dp in cm (or to 3 dp in m) @½ B5 Values of y correctly calculated to 3 dp in m, decreasing @¼ B6 Values of log l read to 3 dp: -0.046, -0.097, -0.155, -0.222, -0.301, -0.398, -0.523 B7 @¼ Values of logy read to 3 dp @¼ C1 Title of the graph: A graph of log y against log l C2 Axes: Each drawn with an arrow in the increasing direction, each labeled with quantity and unit½ + ½ C3 Scales: Uniform, each spanning at least ½ pg, demarcations marked, starting values C4 indicated ½ + ½			81/2
B ₃ Initial positions of pointer, P _o , recorded to 1 dp in cm (or to 3 dp in m) @½ B ₄ Final positions of pointer, P, recorded to 1 dp in cm (or to 3 dp in m) @½ B ₅ Values of y correctly calculated to 3 dp in m, decreasing @¼ B ₆ Values of log <i>l</i> read to 3 dp: -0.046, -0.097, -0.155, -0.222, -0.301, -0.398, -0.523 B ₇ @¼ Values of logy read to 3 dp @¼ C ₁ Title of the graph: A graph of log y against log l C ₂ Axes: Each drawn with an arrow in the increasing direction, each labeled with quantity and unit½ +½ C ₃ Scales: Uniform, each spanning at least ½ pg, demarcations marked, starting values C ₄ indicated½ +½	B_1	Columnar table of: l , P_0 , P , y , $log l$ and $log y$ @ $\frac{1}{4}$	11/2
B4 Final positions of pointer, P, recorded to 1 dp in cm (or to 3 dp in m) @½ B5 Values of y correctly calculated to 3 dp in m, decreasing @¼ B6 Values of log l read to 3 dp: -0.046, -0.097, -0.155, -0.222, -0.301, -0.398, -0.523 B7 @¼ Values of logy read to 3 dp @¼ C1 Title of the graph: A graph of log y against log l C2 Axes: Each drawn with an arrow in the increasing direction, each labeled with quantity and unit½ +½ C3 Scales: Uniform, each spanning at least ½ pg, demarcations marked, starting values C4 indicated½ +½	B_2	Correct units: (m), (cm), (cm), (m), -, - @1/4	11/2
B ₅ Values of y correctly calculated to 3 dp in m, decreasing @½ B ₆ Values of log l read to 3 dp: -0.046, -0.097, -0.155, -0.222, -0.301, -0.398, -0.523 B ₇ @½ Values of logy read to 3 dp @½ C ₁ Title of the graph: A graph of logy against log l C ₂ Axes: Each drawn with an arrow in the increasing direction, each labeled with quantity and unit½ +½ C ₃ Scales: Uniform, each spanning at least ½ pg, demarcations marked, starting values C ₄ indicated½ +½	B ₃	Initial positions of pointer, P _o , recorded to 1 dp in cm (or to 3 dp in m) @½	31/2
B ₆ Values of log l read to 3 dp: -0.046, -0.097, -0.155, -0.222, -0.301, -0.398, -0.523 B ₇ @ ¹ / ₄ Values of logy read to 3 dp @ ¹ / ₄ C ₁ Title of the graph: A graph of log y against log l C ₂ Axes: Each drawn with an arrow in the increasing direction, each labeled with quantity and unit	B_4	Final positions of pointer, P, recorded to 1 dp in cm (or to 3 dp in m) @½	31/2
B ₇ @ ¹ / ₄ Values of logy read to 3 dp @ ¹ / ₄ C ₁ Title of the graph: A graph of logy against log l C ₂ Axes: Each drawn with an arrow in the increasing direction, each labeled with quantity and unit	B ₅	Values of y correctly calculated to 3 dp in m, decreasing @1/4	2
Values of logy read to 3 dp @½ C1 Title of the graph: A graph of log y against log l C2 Axes: Each drawn with an arrow in the increasing direction, each labeled with quantity and unit½ + ½ C3 Scales: Uniform, each spanning at least ½ pg, demarcations marked, starting values C4 indicated ½ + ½	B ₆	Values of $\log l$ read to 3 dp: -0.046, -0.097, -0.155, -0.222, -0.301, -0.398, -0.523	2
C ₁ Title of the graph: A graph of log y against log l C ₂ Axes: Each drawn with an arrow in the increasing direction, each labeled with quantity and unit	B ₇	@1/4	2
C ₁ Title of the graph: A graph of log y against log l C ₂ Axes: Each drawn with an arrow in the increasing direction, each labeled with quantity and unit		Values of logy read to 3 dp @1/4	
C ₂ Axes: Each drawn with an arrow in the increasing direction, each labeled with quantity and unit			16
quantity and unit	C_1	Title of the graph: A graph of log y against log l	1/2
C ₃ Scales: Uniform, each spanning at least ½ pg, demarcations marked, starting values C ₄ indicated ½ + ½	C_2	Axes: Each drawn with an arrow in the increasing direction, each labeled with	
values $C_4 \qquad \text{indicated} \qquad \dots \qquad \frac{1}{2} + \frac{1}{2}$		quantity and unit $1/2 + 1/2$	1
C_4 indicated	C ₃	Scales: Uniform, each spanning at least ½ pg, demarcations marked, starting	
		values	1
	C ₄	indicated $1/2 + 1/2$	31/2
Points correctly plotted: no shading, no use of star $(a)^{1/2}$	C_5	Points correctly plotted: no shading, no use of star@1/2	1/2



C ₆	Best fit: awarded if at least 4 points were correctly plotted	1
	Intercept, C, correctly read and $-1.280 \le C \le -0.870$ to 2 or 3 dp	
	1/2	
		71/2
D_1	Substitution into $C = log(\frac{0.4g}{Ebd^3})$ All in SI units	17
		1/2
D_2	E correctly calculated and $(1.00 \le E \le 2.50) \times 10^{10} \text{ N m}^{-2}$ to 3 sig. figures 1	11/2
D_3	+ 1/2	1
	Calculation of the average value of E from the two methods to 3sig. figures ½	
	$+\frac{1}{2}$	
		3
<i>Total</i> = 34		

QUESTION 2		
Code	Points to score	Marks
A_1	u recorded to 1 decimal place in cm and $9.0 \le h \le 12.0$ cm $2 + \frac{1}{2}$	21/2
A_2	v recorded to 1 decimal place in cm and $9.0 \le a \le 12.0$ cm $2 + \frac{1}{2}$	2½
A ₃	f correctly calculated to 1 decimal place in cm and $9.0 \le f_1 \le 12.0$ cm $1 + \frac{1}{2}$	1½
		6½
B_1	Columnar table of y, X_1 , X_2 , d, y^2 , d^2 and $(y^2 - d^2)$ @1/4	2
B_2	Correct units: (cm), (cm), (cm), (cm), (cm 2), (cm 2), (cm 2) @ $^{1/4}$	2
\mathbf{B}_3	Values of X_1 increasing between $10.0-14.0$ cm, recorded to 1 dp in cm@ $\frac{1}{2}$	3
B ₄	Values of X_2 decreasing between $10.0-14.0$ cm, recorded to 1 dp in cm@ $\frac{1}{2}$	3
B ₅	d correctly calculated to 1 dp in cm@1/4	1½
B_6	y^2 correctly calculated to 1 dp in cm ² @ $\frac{1}{4}$	1½
B ₇	d^2 correctly calculated to 3 or 4 significant figures cm ² (0 dp)@ $\frac{1}{4}$	1½
B ₈	$(y^2 - d^2)$ correctly calculated to 3 or 4 significant figures cm ² $(0 dp) \dots @\frac{1}{4}$	11/2
		16
C_1	Title of the graph: A graph of $(y^2 - d^2)$ against y	1/2
C_2		

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	Axes: Each drawn with an arrow in the increasing direction, each labeled with	1
C ₃	quantity and unit $1/2 + 1/2$	
	Scales: Uniform, each spanning at least ½ page, demarcations marked, starting	1
C ₄	values	3
C ₅	indicated	1/2
C ₆	Points correctly plotted: no shading, no use of stars@1/2	
C ₇	Best fit: awarded if at least 4 points were correctly plotted	1½
	s correctly calculated, if the coordinates were correctly read and	
	$36.0 \le s \le 48.0$ recorded to 1 or 2 decimal places $1 + \frac{1}{2}$	
		71/2
D_1	Substitution into $s = 4f$	1/2
D_2	f correctly calculated and $9.0 \le f \le 12.0$ to $1dp \dots 1 + \frac{1}{2}$	11/2
D_3	Calculation of the average value of f from the two methods to 1dp $\frac{1}{2} + \frac{1}{2}$	1
		3
	<i>Total</i> = 33	

QUESTION 3		
Code	Points to score	Marks
\mathbf{A}_1	Values of $I_1 = 0.26 - 0.32$ A, recorded to 2 decimal places $1 + \frac{1}{2}$	11/2
A_2	Values of $V_1 = 1.29 - 1.34 \text{ V}$, recorded to 2 decimal places $1 + \frac{1}{2}$	11/2
A_3	Values of $I_2 = 0.17 - 0.22$ A, recorded to 2 decimal places $1 + \frac{1}{2}$	11/2
A_4	Values of $V_2 = 1.35 - 1.41$ V, recorded to 2 decimal places $1 + \frac{1}{2}$	11/2
A ₅	Correct substitution into $\sigma = \frac{1}{2} \left[\frac{2V_1}{I_1} + \frac{4V_2}{3I_2} \right]$	1
A_6	occorrectly calculated and $8.0 \le \sigma \le 10.0 \ \Omega \ m^{-1}$. $1 + \frac{1}{2}$	11/2
		81/2
B ₁	Columnar table of: x , y , $\frac{1}{x}$, $\frac{1}{y}$	1
B_2	Correct units: (m) , (m) , (m^{-1}) , (m^{-1}) @ $\frac{1}{4}$	1
\mathbf{B}_3		

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B ₄	Values of y increasing between 0.380 and 0.600 m, recorded to 3 dp in m (or 1 dp in cm) @1	6 1½
	Values of $\frac{1}{x}$ calculated to 2 decimal places @1/4	11/2
B ₅	Values of $\frac{1}{y}$ correctly calculated to 2 decimal places	1/2
		11
C_1	Title of the graph: A graph of $\frac{1}{y}$ against $\frac{1}{x}$	1/2
C_2	Axes: Each drawn with an arrow in the increasing direction, each labeled with quantity and unit $\frac{1}{2} + \frac{1}{2}$	1
C ₃	Scales: Uniform, each spanning at least ½ page, demarcations marked, starting values	1
C_4	indicated $\frac{1}{2} + \frac{1}{2}$	3
C_5	Points correctly plotted: no shading@½	1/2
C_6	Best fit: awarded if at least 4 points were correctly plotted	1/2
C ₇	Indication of triangle or equivalent for calculating s, covering all points	
	s correctly calculated, if the coordinates were correctly read and $0.180 \le s \le 0.212$ recorded to 2 or 3 decimal places $1 + \frac{1}{2}$	11/2
C_8	The intercept, C, correctly read and $1.50 \le s \le 2.00 \text{ m}^{-1}$ $1 + \frac{1}{2}$	11/2
		91/2
D_1	Substitution into $\mathbf{r} = \frac{\mathbf{S}\mathbf{\sigma}}{\mathbf{C}}$	1/2
D_2	r correctly calculated and $0.40 \le r \le 0.80$ to 2dp $1 + \frac{1}{2}$	11/2
D_3	Mention of any 2 genuine sources of error @½	1
	e.g - resistances at connection points	
	- the cells used may slightly run down during the experiment	
D_4	Mention of any 2 scientific precautions taken relevant to the experiment	1
	,	
	@1/2	
	@½ e.g - ensuring firm connections	
	e.g - ensuring firm connections	
	e.g - ensuring firm connectionsopen the switches until when taking readings	4