

**PHYSICS 232/3**  
**MARKING SCHEME**

Q1. (a)  $G = 50 \pm 0.5 \text{ cm} \sqrt{\quad}$  1dp

(b)  $P = 58.4 \pm 0.5 \sqrt{\quad}$  1 1dp

Each correct entry of y column 1mk each.

X (cm)	Position of 50g mass	Y (cm)	
5	58.4	8.4	±0.5
10	67.7	17.7	±0.5
15	76.6	26.6	±0.5
20	85.6	35.6	±0.5
25	94.7	44.7	(5mks)

(c) (i) see graph attached ( fig.) (5mks)

(ii)  $\text{slope} = \frac{\Delta y}{\Delta x} = \frac{40 - 14}{22.5 - 8} = \frac{26}{14.5} \sqrt{\quad}$  extraction + substitution

$= 1.793 \pm 0.3 \sqrt{\quad}$  Ans (3mks)

(d)  $\frac{y}{X} = \frac{(0.68 - 12.0 \times 10^{-5}) d}{0.32}$

$1.793 = \frac{(0.68 - 12.0 \times 10^{-5}) d \sqrt{\quad}}{0.32}$  subst (1mk)

$d = \frac{0.32 \times 1.793}{(0.68 - 12.0 \times 10^{-5}) \sqrt{\quad}}$  (1mk)

$= 0.84391 \sqrt{\quad}$  (1mk)

Q2. (a)  $d = \frac{0.25 + 0.26 + 0.25}{3}$

$= 0.2533\text{mm}$  Ans + Avarage shown (1mk)  
4sf

At least 6

(e) - - correct entries of v column – ½ mk each All entries of R – 2mks

- At least 5 entries of mA – 2mks. All entries of A - 1mk

L (cm)	L (m)	V (volts)		Current mA	A	$R = \frac{V}{I}$
20	0.2	0.20		80	0.08	2.50
30	0.3	0.30		80	0.08	3.75
40	0.4	0.40		80	0.08	5.00
50	0.5	0.50		80	0.08	6.25
60	0.6	0.60		80	0.08	7.50
70	0.7	0.70		80	0.08	8.75
80	0.8	0.80		80	0.08	10.00

(total 8mks)

F (i) see graph attached (fig2) -

(5mks)

(ii) slope =  $\frac{\Delta R}{\Delta L} = \frac{(8-2)\Omega}{(0.64 - 0.16)m}$   $\sqrt{\sqrt{\text{extraction + subst}}}$   
 $= 12.5\Omega/m$

(iii)  $R = L / A$

$\frac{AR}{L} =$

$A = 3.142 \times (0.2533 \times 10^{-3})^2$   $\sqrt{\text{area}}$

$R/L = 12.5$

$f = 3.142 \times (0.2533 \times 10^{-3})^2 \times 12.5$   $\sqrt{\text{subst.}}$

$= 9.948 \times 10^{-6} \Omega m$   $\sqrt{\text{Ans.}}$

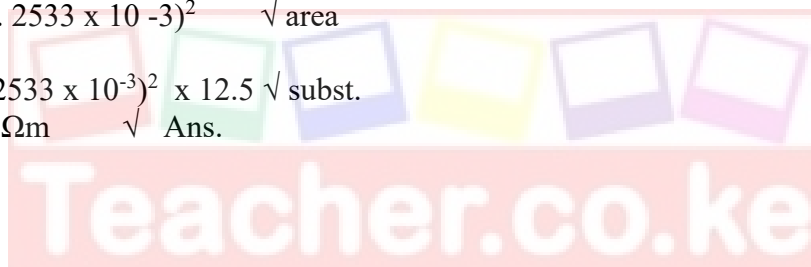


Fig 1



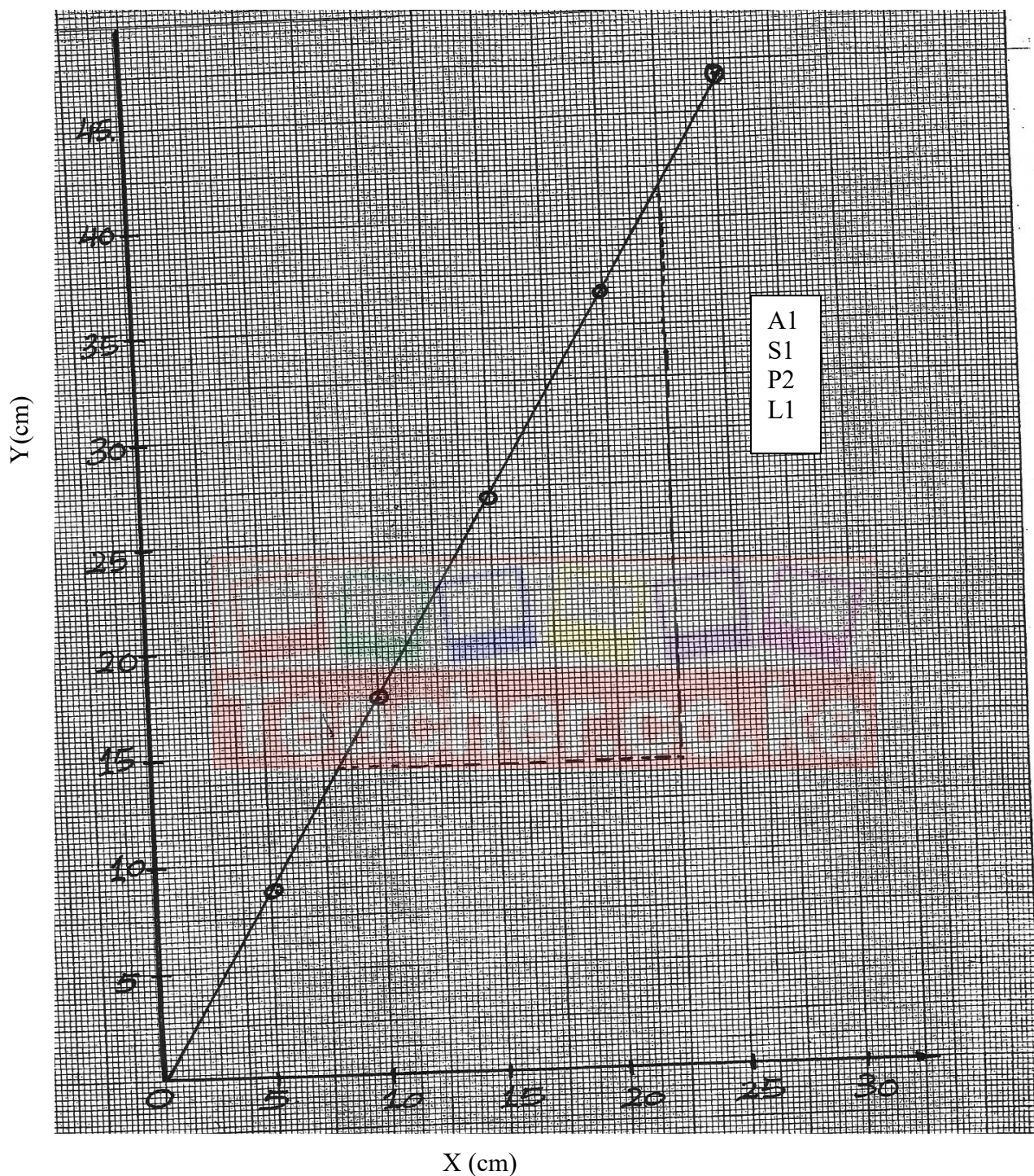
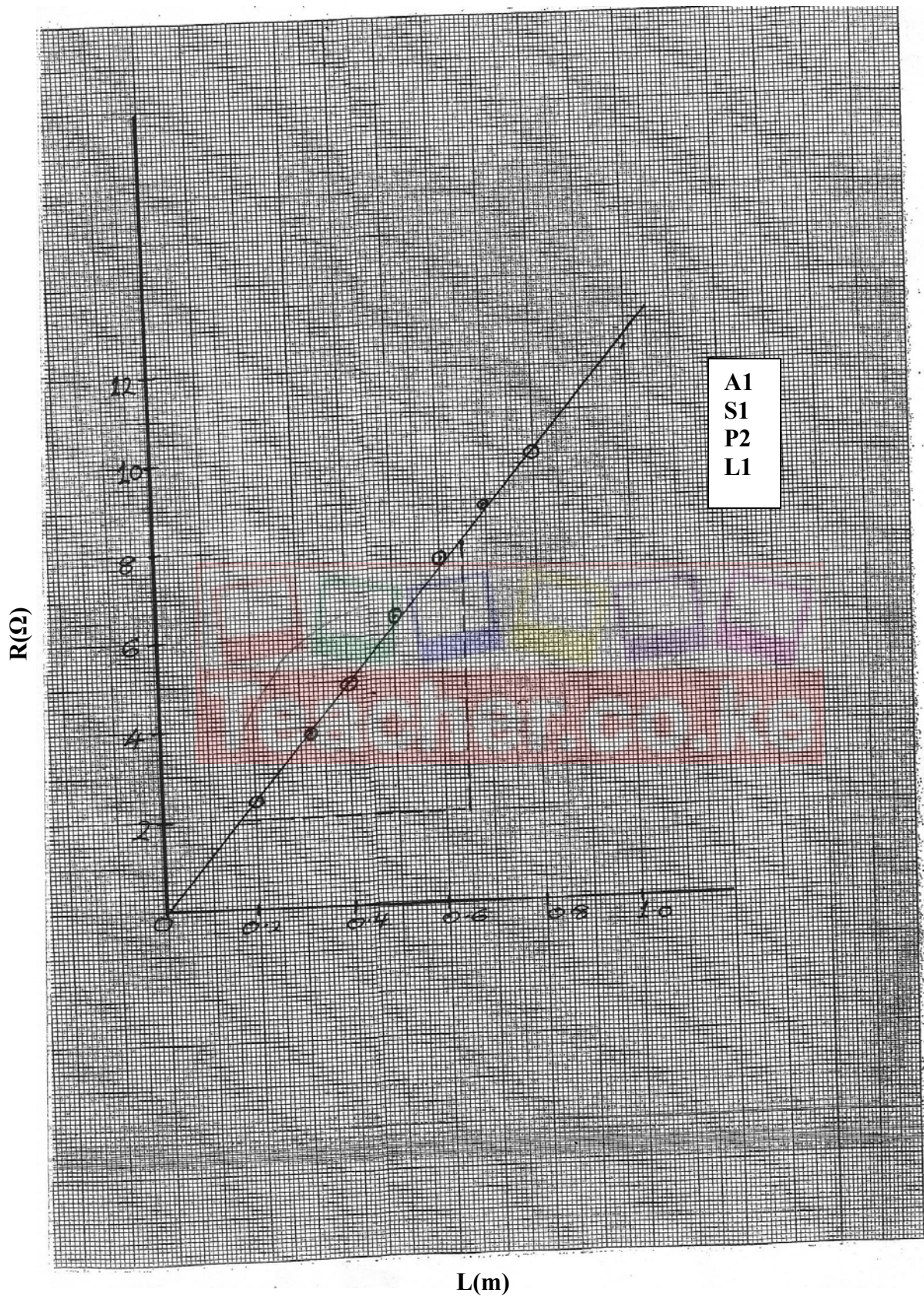


Fig2





L(m)