**PHYSICS 232/3**

**MARCH 2020**

**MARKING SCHEME**

Q1. (a) G = 50 ± 0.5 cm √ 1dp

(b) P = 58.4 ± 0.5 √ 1 1dp

Each correct entry of y column 1mk each.

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

±0.5

±.05

±0.5

±0.5

±0.5

(5mks)

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

(ii) slope = ∆y = 40 – 14 = 26 √√ extraction + substitution

∆x 22.5 -8 14.5

= 1.793 ± 0.3 √ Ans (3mks)

(d) y = (0.68 - 12.0 x 10 -5) d

X 0.32

1.793 = ( 0.68 – 12.0 x 10 -5) d √ subst (1mk)

0.32

d=0.32 x 1.793

(068 – 12.0x 10 -5) √ (1mk)

= 0.84391 √ (1mk)

Q2. (a) d= 0.25 + 0.26 + 0.25

3

= 0.2533mm 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= 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 |

(total8mks)

F (i) see graph attached (fig2) - (5mks)

(ii) slope = ∆R = (8-2)Ω √√ extraction + subst

∆L (0.64 – 0.16)m

= 12.5Ω/m

(iii) R = L /A

AR =

L

A = 3.142 x ( 0. 2533 x 10 -3)2 √ area

R/L = 12.5

f = 3.142 x (0.2533 x 10-3)2 x 12.5 √ subst.

= 9.948 x 10 -6 Ωm √ Ans.

Fig 1

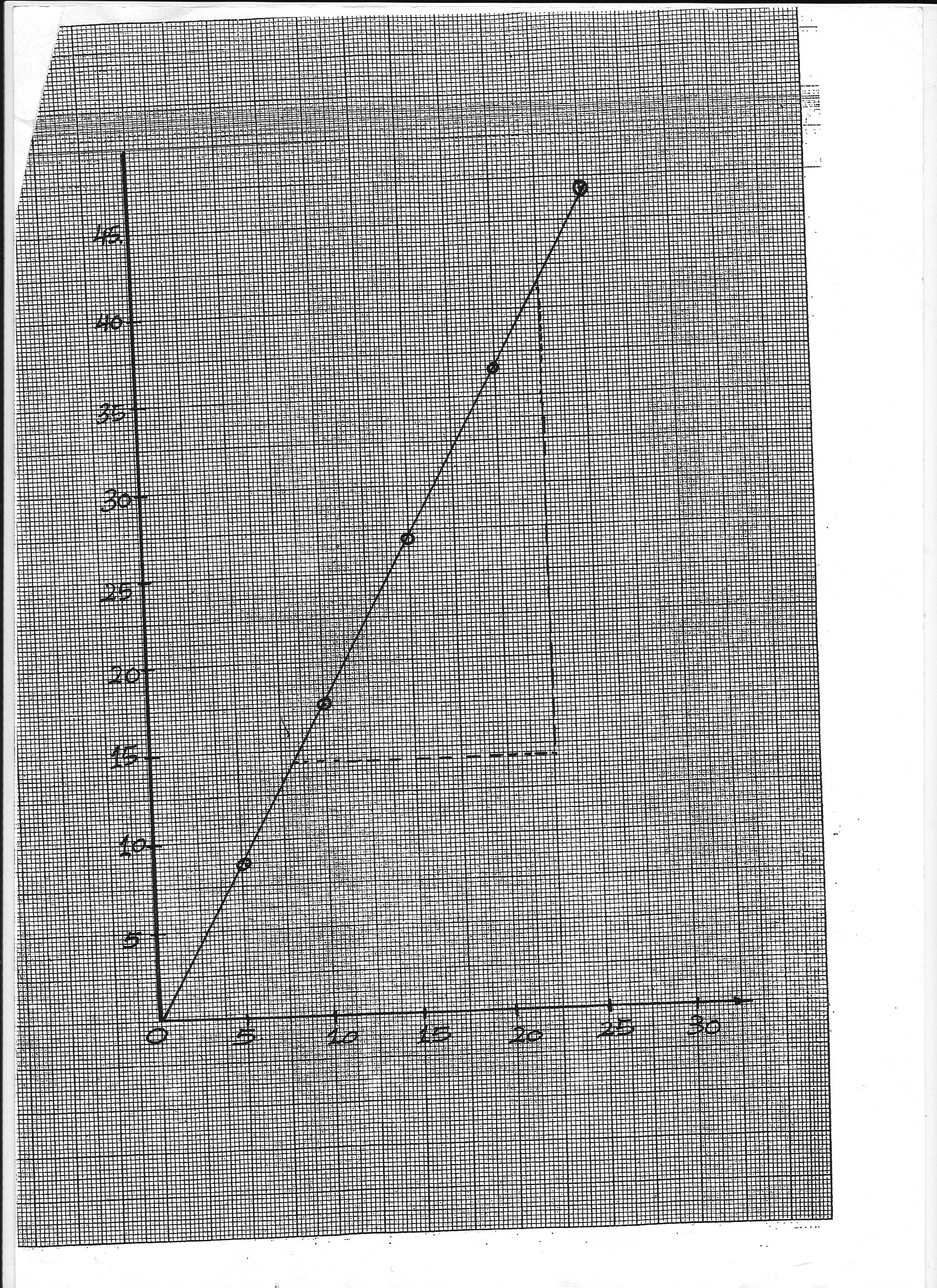
A1

S1

P2

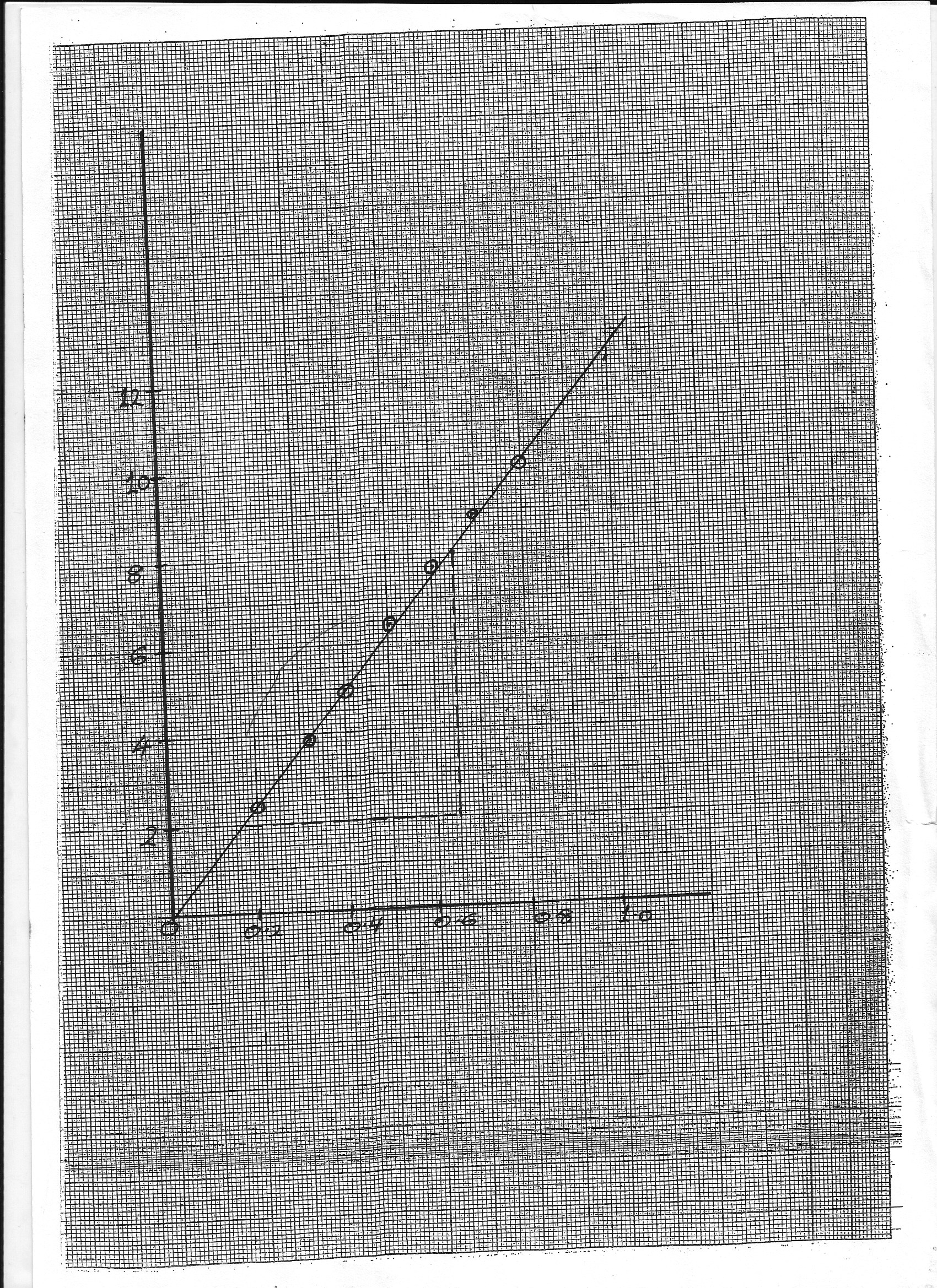
L1

Y(cm)



X (cm)

Fig2



**A1**

**S1**

**P2**

**L1**

**R(Ω)**

**L(m)**