Date _____

Expt. No. _____ Page No. _____

Experiment - 2

Objective: To determine the resistivity of given sample using four probe method.

Apparatus: Digital Ammeter, voltmeter, probes, dc current source.

Formula Used: $\rho = 2\pi s \frac{V}{I}$ $s \rightarrow$ probe spacing

$\rho = \rho_0 G_4$ $G \rightarrow$ correlation fn which corrects for finite thickness of sample.

Result: from the graph:

$R = 58\ \Omega$

and

$\rho = 84.91 \Omega cm$ $\rho_0 = 10.61 \Omega cm$

Precautions: 1) Surface of sample used should be flat.
2) All four probes should be collinear.
3) Voltage should be measured using four probes only.

Teacher's Signature _____

10200325

Objective: To determine the resistivity of given sample using four probe method.

Apparatus: digital ammeter, voltmeter, probes, dc current source.

Formula used: $\rho = 2\pi s \, V/I$; $f = \rho_0 G$

Observations and Result: In our experimental setup,

$s = 0.233$ cm

$b = 0.04$ cm

$b/s = 0.172$ So, $G(b/s) = G(0.172) = 8$

I(mA)	V(mV)
1	61
2	122
3	181
4	239
5	300
6	359
7	418
8	475
9	531
10	583

$$R = \frac{V_{10} - V_1}{I_{10} - I_1}$$

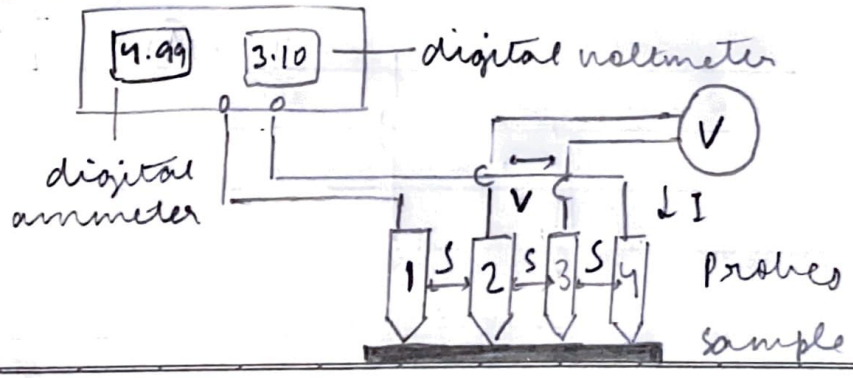
$$= \frac{583 - 61}{10 - 1}$$

$$= \frac{522}{9} = 58\,\Omega$$

$\rho_0 = 2\pi s R = 84.91\,\Omega$ cm

$\rho = \rho_0 / G = 10.6\,\Omega$ cm

Diagram:



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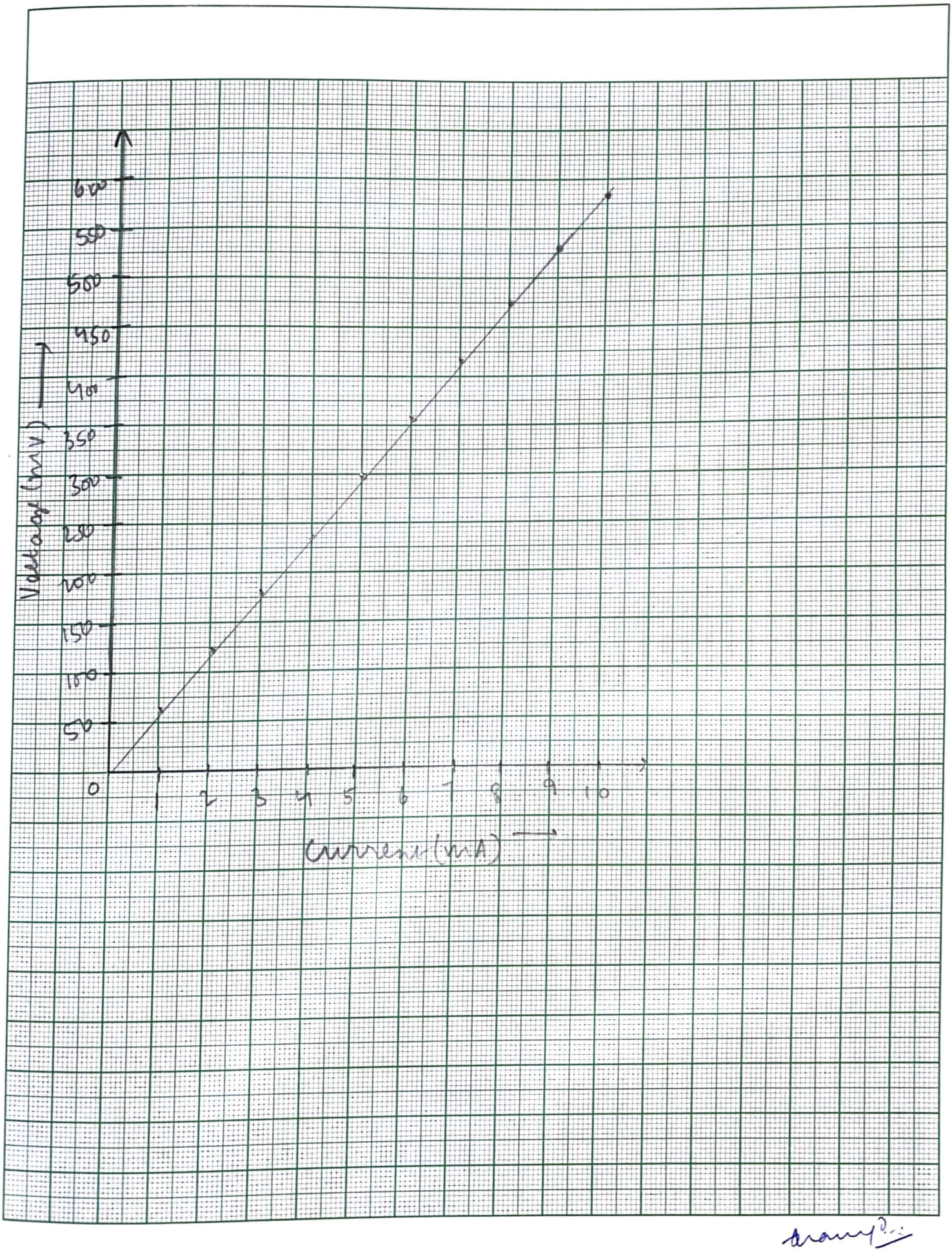
600
550
500
450
400
350
300
250
200
150
100
50
0
Voltage (mV)
1
2
3
4
5
6
7
8
9
10
Current (mA)