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Experiment 5
Date: 14/12/2022

*Title:*Wheatstone Bridge

Submitted to

(Romina Group 6)

*Department
of
Basic Sciences and Humanities*

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In partial fulfillment of the requirements for the course

*Nicosia, Turkish Republic of Northern Cyprus
2022/2023*

PHY 102
Content of report

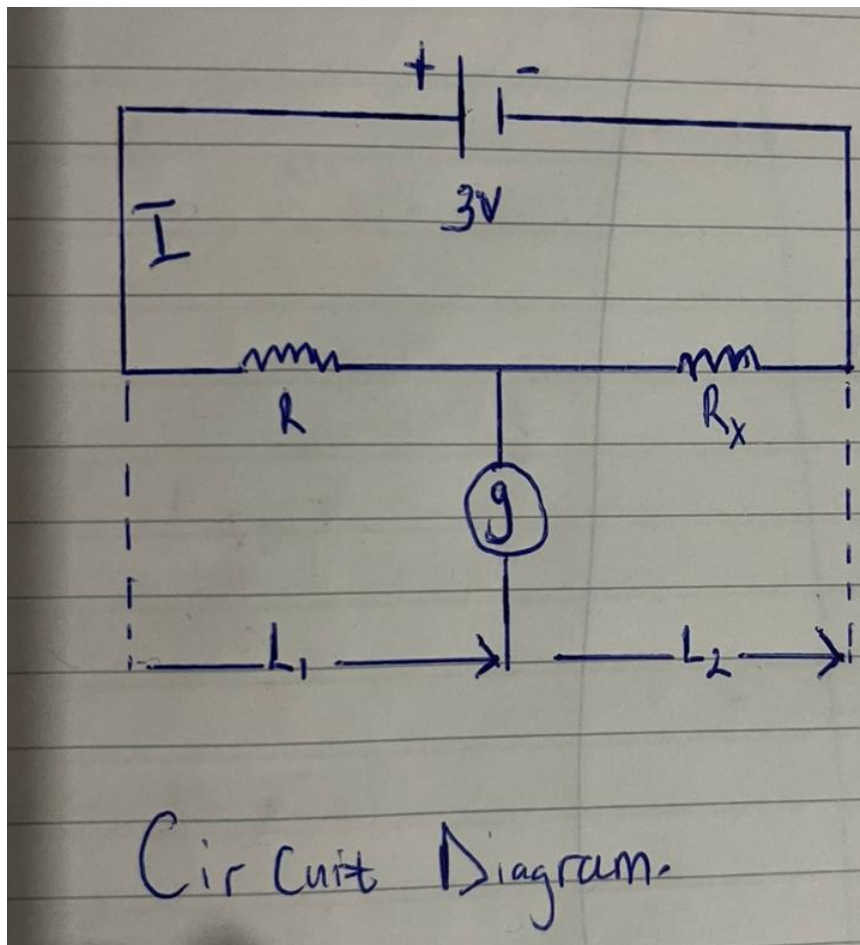➢Aim of experiment

1. To determine the resistance of the unknown resistor

2. To study and understand the usage of wheatstone bridge in determining the resistance of an unknown resistor

➢Apparatus

1. Power supply (3v)
2. Resistors(2x)
3. Connecting cable
4. Multimeter
5. Galvanometer
6. Wheatstone bridge

➢Diagram

Cir Cuit Diagram.

➢Procedure
  1.   The circuit was set up
  2.The value of the current was found with the multimeter
3.The resistance of the known resistor was measured
4. L_1 was recorded on the galvanometer when the multimeter showed zero
5. The resistance of the unknown resistor was found(R_x)

➢Equation
$R_x/L_2=R/L_1$

$R_x = R * L_2/L_1$

$L_1 + L_2 = 100$

$L_1 = 100 - L_2$

Where R_x = unkown resistor (Ω)

R = known resistor

L_2 = measured length(cm)

L_1 = calculated length (cm)

➤ Table

$L_{1(cm)}$	$L_{2(cm)}$	$R\,\Omega$	Measured value R_x	Calculated value R_x
18.70	81.30	21.70	98.70	94.34

➤ Graph (***where applicable)***
There is no graph for this experiment
➤ Calculations

$L_1 + L_2 = 100$

$L_1 = 100 - L_2$

$100 - 81.30 = 18.70$ cm

$R_x/L_2 = R/L_1$

$R_x = R * L_2/L_1$

$= 21.70 * 81.30/18.70$

$= 94.34_{(\Omega)}$

➤ Results & Discussion

The Calculated value of R_x is not equal to the measured value of R_x because there must have been some errors in the during the experiment in lab(errors like parallax errors, malfunction of the lab apparatus)

The percentage error of the R_x = Actual value - Expected value/Expected value * 100

=98.70 - 94.34/94.34*100

=4.62% error

➢Conclusion

The experiment was successful and the resistance of the unknown resistor was determined with the usage of wheatstone bridge.