

## Sharjah Indian School Sharjah – Boys Wing

### Subject : Physics Practicals (Class X)

Read the instructions given below carefully before writing the fair record book.

- The following details are to be written on the LEFT HAND SIDE of the book.

CIRCUIT DIAGRAM

OBSERVATIONS

CALCULATIONS

- The remaining details should be written on the RIGHT HAND SIDE of the book.
- Readings for experiments 2 and 3 can be entered after reopening of the school. However, all other details should be written carefully.
- Maintain neatness of the book.
- Graph should be plotted using the readings and it should be attached along with observations.
- For any clarifications regarding this, mail to [sisboyswing@gmail.com](mailto:sisboyswing@gmail.com) .

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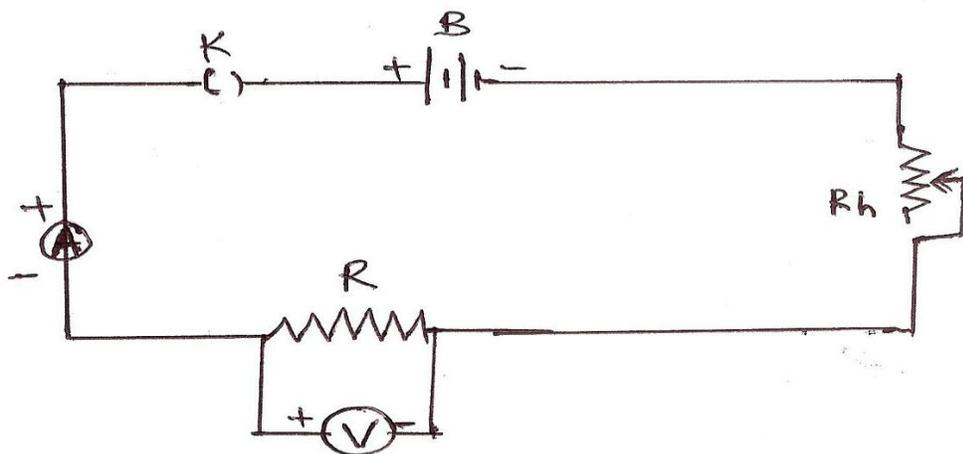
Experiment No. 1

### OHM'S LAW

**AIM:** To study the dependence of current  $I$  on the potential difference ' $V$ ' across a resistor and to determine its resistance. Also to plot the graph between  $V$  and  $I$ .

**APPARATUS:-** Conducting wires, resistance wires, a single key, an ammeter, a voltmeter, cell, a rheostat etc

### CIRCUIT DIAGRAM:



### **OBSERVATIONS**

Sl. No.	Voltmeter reading (V)	Ammeter reading (I)	Resistance $R = V/I$ ( $\Omega$ )
01	0.4	0.2	2
02	0.8	0.4	2
03	1.0	0.5	2
04	1.4	0.7	2

Mean Resistance =  $\Omega$

**THEORY:-** Ohm's Law states that the current flowing through a given wire is directly proportional to the potential difference between its ends.

$V \propto I$  or  $V = IR$ , where 'R' represents the resistance of the given wire.

**PROCEDURE:-** Connect the given circuit as shown in the diagram. Adjust the position in the rheostat such that the current through the circuit is measurable. Connect the ammeter and the voltmeter correctly as shown.

Close the key and measure ammeter reading and voltmeter reading as I and V respectively. Tabulate them. Repeat for different emf's of the battery. Calculate V/I for each set of data. This gives the resistance. Average resistance can be calculated. Draw the V-I graph taking V along the Y axis and I along the X axis. The graph is a straight line passing through the origin.

**RESULT:-** (i) As the ratio of  $V \div I$  is a constant, R, Ohm's law is proved.

(ii) As the graph is a straight line passing through the origin, Ohm's law is proved.

(iii) The resistance of the given wire =  $\Omega$

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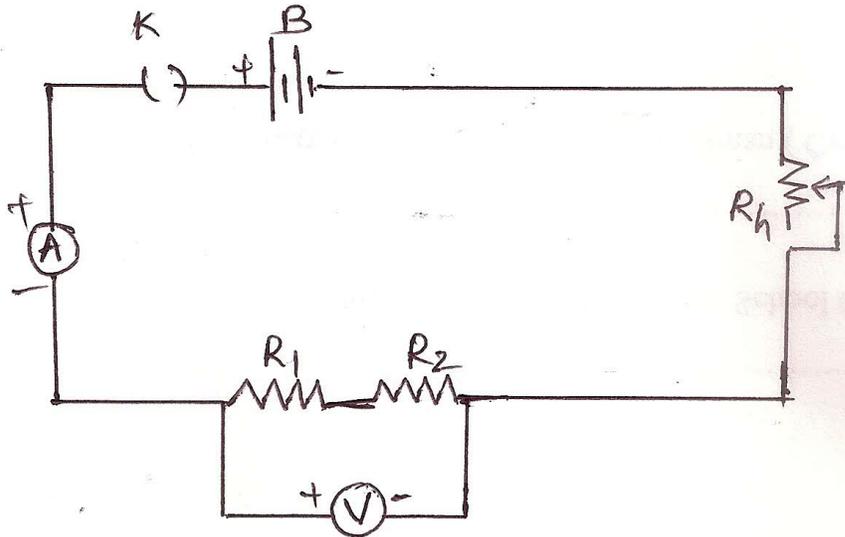
## Subject : Physics Practicals (Class X)

### Experiment No.2

### Series combination of resistors

AIM: To determine the equivalent resistance of two resistors connected in series.

APPARATUS:- Battery eliminator, plug key, an ammeter, a voltmeter, two resistors, wires.



### OBSERVATIONS

Sl. No.	Voltmeter reading (V)	Ammeter reading (I)	Resistance $R = V/I$ ( $\Omega$ )
01			
02			
03			
04			

THEORY:- When two or more resistances are connected in series, then the resultant resistance is equal to the sum total of the individual resistances. If 'R' is the resultant resistance in series and  $r_1$  and  $r_2$  are the individual resistances,

Then,  $R_s = r_1 + r_2$

PROCEDURE:- Connect the key to the ammeter in series with the battery eliminator as in the circuit diagram. Connect a voltmeter in parallel to the combination of the two resistance wires. Insert the plug key. Measure the values of current and potential difference. Record the values in the table. Repeat the experiment by increasing the voltage in the battery eliminator. In each case record the values of current and potential difference. Find the resistance by taking the ratio of potential difference and current. Calculate the mean resistance of the combination.

RESULT:- (1) Resistance by calculation =  $\Omega$

(2) Resistance by experiment =  $\Omega$

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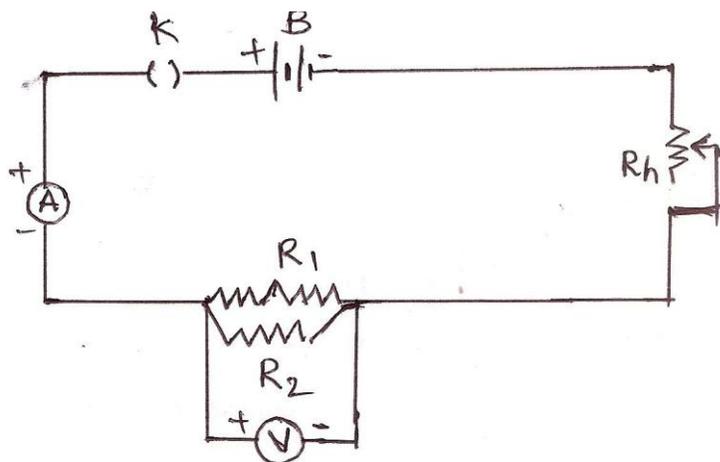
## Subject : Physics Practicals (Class X)

### Experiment No.3

### Parallel combination of resistors

AIM: To determine the equivalent resistance of two resistors connected in parallel.

APPARATUS:- Battery eliminator, plug key, an ammeter, a voltmeter, two resistors, wires.



### OBSERVATIONS

Sl. No.	Voltmeter reading (V)	Ammeter reading (I)	Resistance $R = V/I$ ( $\Omega$ )
01			
02			
03			
04			

THEORY:- When two or more resistances are connected in parallel,, then the reciprocal of resultant resistance is equal to the sum total of the reciprocals of the individual resistances. If 'R' is the resultant resistance in series and  $r_1$  and  $r_2$  are the individual resistances,

Then, 
$$\frac{1}{R_p} = \frac{1}{r_1} + \frac{1}{r_2}$$

PROCEDURE:- Connect the key to the ammeter in series with the battery eliminator as in the circuit diagram. Connect a voltmeter in parallel to the combination of the two resistance wires. Insert the plug key. Measure the values of current and potential difference. Record the values in the table. Repeat the experiment by increasing the voltage in the battery eliminator. In each case record the values of current and potential difference. Find the resistance by taking the ratio of potential difference and current. Calculate the mean resistance of the combination.

RESULT:- (1) Resistance by calculation =  $\Omega$

(2) Resistance by experiment =  $\Omega$