1. Calculate the unknown resistance by using appropriate formula.
2. Now, exchange the position of unknown and known resistance and again repeat the steps 2, 3, 4, 5 and 6.

To find resistivity of wire

3. Find the length (***L***) and diameter (***d***) of the wire using meter scale and screw gauge respectively.
4. Calculate the resistivity of wire using appropriate formula [after knowing the value of ***X.***]

OBSERVATIONS:

Least count of meter scale = … … … …

Least count of screw gauge = … … … …

Instrumental error in screw gauge = … … … …

Length of given wire, $L = \ldots \ldots \ldots m$

Diameter of given wire, $d = \ldots \ldots \ldots m$

Observation Table:

- **To find unknown resistance (of the given wire):**

S. N.	Known resistance (R)		Balanced length (from zero end) l (cm)	$100 - l$ (cm)	Unknown resistance (X in left gap) $X = \frac{l}{100 - l} \times R$	Unknown resistance (X in right gap) $X = \frac{100 - l}{l} \times R$	Mean $\boldsymbol{X}$ **(Ω)**
	Right gap	Left gap					
1.	1Ω	-				-	
2.	2Ω	-				-	
3.	3Ω	-				-	
4.	-	1Ω			-		
5.	-	2Ω			-		
6.	-	3Ω			-		

CALCULATIONS:

From above table, the mean resistance of the given wire, $X = \ldots \ldots \ldots \Omega$.

The resistivity of the wire is:

$$\rho = \frac{\pi d^2}{4 L} X$$

$$or, \quad \rho = \ldots \ldots \ldots.$$

$$or, \quad \rho = \ldots \ldots \ldots. \ldots \ldots \ldots \ldots \ \Omega\, m.$$

PERCENTAGE ERROR:

Standard value of resistivity of given wire, $\rho_s = \ldots \ldots \ldots \ldots \ldots \ldots \ldots$ (being …….. wire)

Observed value of resistivity of given wire, $\rho_o = \ldots \ldots \ldots \ldots \ldots \ldots \ldots$