

## ASSISGNMENT-2 EXPERIMENT-2

### CALIBRATION OF AMMETER USING POTENTIOMETER

#### AIM

To calibrate the given ammeter by potentiometer. (i.e. To check the graduations of ammeter and to determine the corrections, if any).

#### APPARATUS REQUIRED

Potentiometer, rheostat, batteries (2V and 6V) (or) accumulators, keys, Daniel cell, high resistance, sensitive table galvanometer, the given ammeter, a standard resistance (1  $\Omega$ ) (or) a dial type resistance box (1–10 ohm) connecting wires etc.

#### FORMULAE

Calibrated current passing through standard resistance

$$i' = (1.08 \times l) / (R \times l_0) \text{ A}$$

where  $R$  = Standard resistance ( $R = 1 \Omega$ )

$l$  = Balancing length for different ammeter readings (m)

$l_0$  = Balancing length corresponding to e.m.f. of Daniel cell (m)

#### CIRCUIT DIAGRAMS

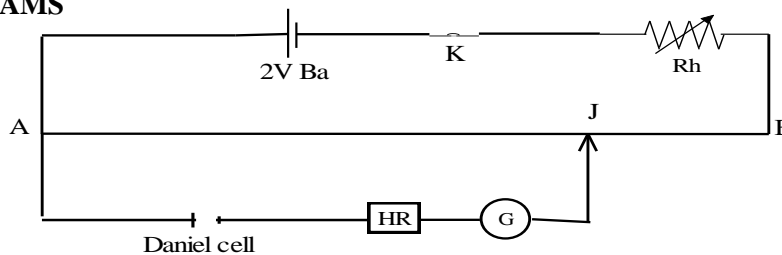


Fig.2.1 Standardization of Potentiometer

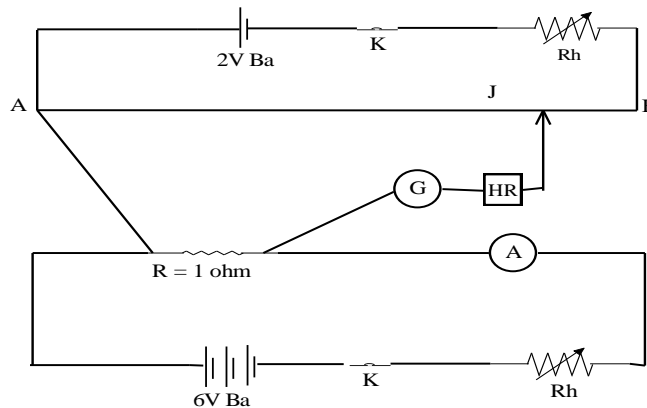


Fig.2.2 Calibration of Ammeter

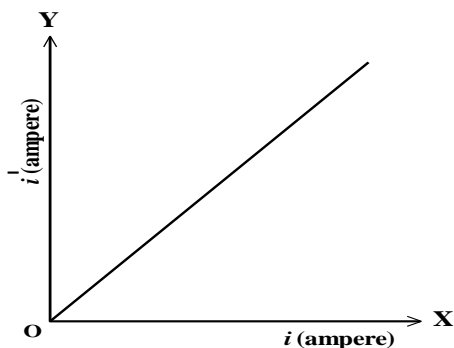
## OBSERVATIONS

**Table 2.1: To calibrate the given ammeter**

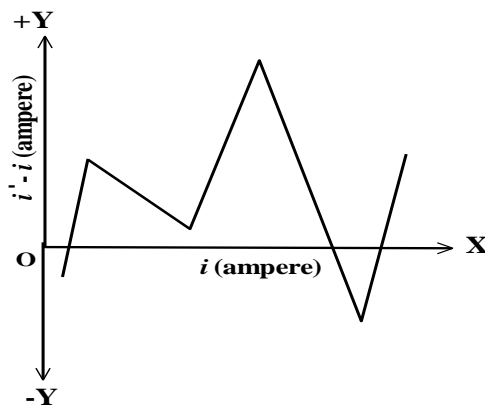
Balancing length  $l_0 = 5.554$  m

(Length of the wire balancing the emf of the Daniel cell)

S.No.	Ammeter reading $i$ (A)	Length balancing the p.d across 1 ohm coil $l$ m	Calculated ammeter reading $i' = \frac{1.08}{l_0} \times l$ (A)	Correction $(i' - i)$ (A)
1	0.1	0.380	?	?
2	0.2	0.960	?	?
3	0.3	1.500	?	?
4	0.4	2.040	?	?
5	0.5	2.500	?	?
6	0.6	3.040	?	?
7	0.7	3.530	?	?
8	0.8	4.130	?	?
9	0.9	4.630	?	?
10	1.0	5.040	?	?



**Fig.2.3 Model Graph ( $i$  vs  $i'$ )**



**Fig. 2.4. Model Graph  $i$  vs  $(i' - i)$**

### Assignment Question:

1. From the balancing lengths  $l_0, l$  calculate the current  $i'$  by using the formula.  
Note down the values in four decimal points in your observation note book.
2. From  $i$  and  $i'$  to calculate  $(i' - i)$  and enter the same in respective column in the tabular column in four decimal points.

3. Draw a graph between ammeter reading ( $i$ ) along the X-axis and the correction ( $i' - i$ ) along the y – axis is drawn. Also draw one more graph between ammeter reading ( $i$ ) along the X-axis and calculated ammeter reading  $i'$  along the Y-axis.

4. Write the result in the following order

The given ammeter is calibrated and calibration graph is drawn.

Finally, submit the scanned copy of your observation note book in GCR on (or) before THREE working days from the date of experiment.