ASSISGNMENT-3 EXPERIMENT-3

CALIBRATION OF VOLTMETER USING POTENTIOMETER

AIM

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

APPARATUS REQUIRED

Potentiometer, rheostat, battery (2V) (or) accumulators, keys, Daniel cell, high resistance, sensitive table galvanometer, given voltmeter, connecting wires etc.

FORMULAE

Calibrated voltage $V' = \dfrac{1.08}{l_0} l$ $(volt)$

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

l = Balancing length for different voltmeter reading (m)
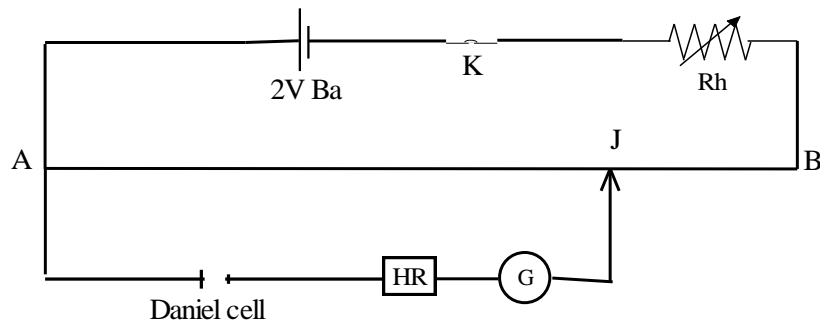
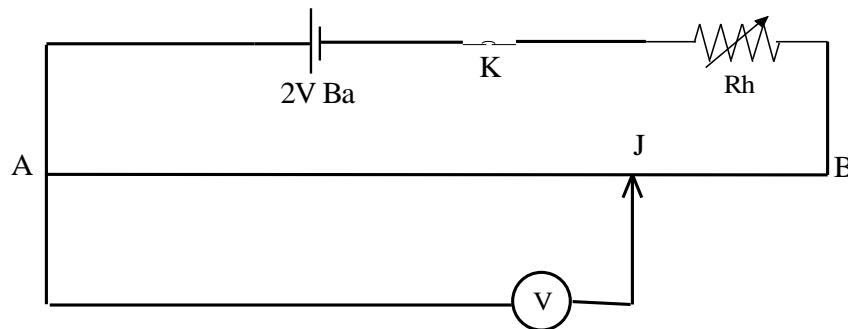**CIRCUIT DIAGRAMS**

Fig.3.1a Standardization of Potentiometer

Fig.3.2a Calibration of Voltmeter

OBSERVATIONS

Table 3.1: To calibrate the given voltmeter

Length of the wire balancing the e.m.f. of the Daniel cell (l_0) = **5.554 m**

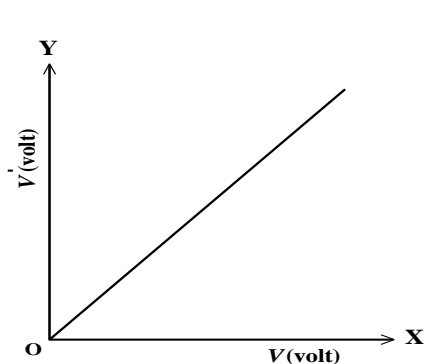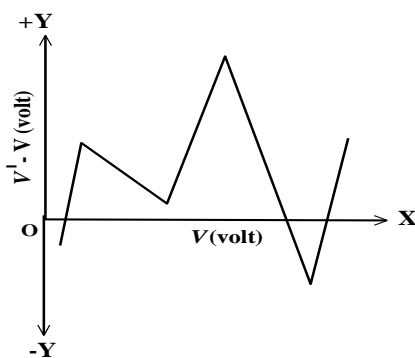| S. No.	Voltmeter reading (V) volt	Balancing Length (l) m	Calculated voltmeter reading $V' = \dfrac{1.08}{l_0} \times l \ (volt)$	Correction (V' − V) Volt
1	0.1	0.678	?	?
2	0.2	1.146	?	?
3	0.3	1.752	?	?
4	0.4	2.223	?	?
5	0.5	2.734	?	?
6	0.6	3.281	?	?
7	0.7	3.875	?	?
8	0.8	4.398	?	?
9	0.9	5.000	?	?
10	1.0	5.523	?	?

Fig. 3.3a Model Graph (*V vs V'*)

Fig. 3.4a Model Graph V vs (*V' − V*)

Assignment Question:

1. From the balancing lengths l_0, l calculate the voltage V' by using the formula. Note down the values in four decimal points in your observation note book.

2. From V and V' to calculate (V'− V) and enter the same in respective coloum in the tabular coloum in four decimal points.

3. Draw a graph between voltmeter reading (V) along the X-axis and the correction (V′ – V) along the y – axis is drawn. Also draw one more graph between voltmeter reading (V) along the X-axis and calculated reading V′ along the Y-axis.

4. Write the result in the following order

The given voltmeter 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.