PHYSICS LABORATORY: Determining Internal Resistance and Emf of a Cell

BACKGROUND INFORMATION AND PURPOSE

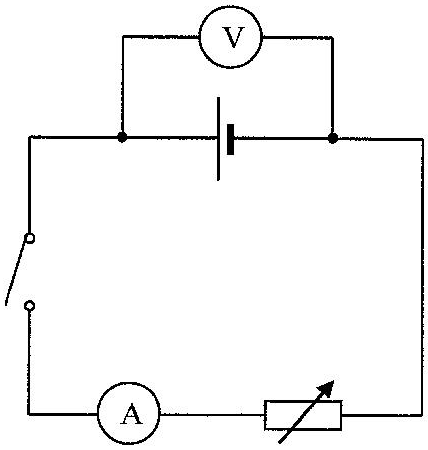
You know that every cell (battery) has a certain amount of internal resistance (r) which is unavoidable and not always negligible. You also know that the 'real' potential difference (V) between the terminals of a cell is less than the emf (ε). The relation between ε , r, and I is given by:

$$V = \varepsilon - Ir$$

In this lab, you will experimentally determine both the emf and internal resistance of a cell (or pairs of cells). You are required to use a graphical method to determine them.

DATA COLLECTION AND PROCESSING (DCP)

You will build the simple circuit shown below, but instead of a variable resistor, you will use a breadboard and different configurations of resistors to get different data values. For this lab you are required to take at least 10 data points, with 3 trials for each.



Remember:

1. **Refer to the 'Physics Lab Report Guide' before submitting your report.**
2. **Attach the 'Physics Lab Report Rubric' as a cover page to your paper copy.**

You will be marked on Data Collection and Processing (DCP) and Conclusion and Evaluation (CE) for this lab.