HACETTEPE UNIVERSITY
DEPARTMENT OF ELECTRICAL & ELECTRONICS ENGINEERING
ELE 112 INTRODUCTION TO ELECTRICAL ENGINEERING LABORATORY

EXPERIMENT #3

POWER MEASUREMENTS IN DC CIRCUITS

Object: To investigate the power generated and dissipated in DC circuits.

Theory: The details are given in the ELE110 Introduction to Electrical Engineering course notes.

2. EXPERIMENTAL WORK

Set up the circuit in Fig. 1.

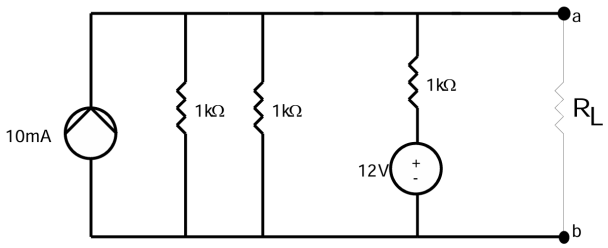

Figure 1.

2.1 Calculate the power generated by the current and the voltage sources by measuring the relevant voltages and currents.
2.2 Calculate the power dissipated by the resistors by measuring the relevant voltages and currents.
2.3 Connect a 1kΩ potentiometer between a and b as R_L, and by increasing the value of R_L in steps of 100Ω from 0 to 700Ω, measure the voltage and current on R_L and calculate the power transferred to R_L.

3. RESULTS & CONCLUSION WORK

3.1 Verify that the total power generated by the sources is equal to the total power dissipated by the resistors.
3.2 Sketch the power versus R_L, using the results in section 2.3., and determine the value of R_L where maximum power transfer occurs.
3.3 Compare the theoretical and practical results, and comment on them briefly.

EQUIPMENT AND COMPONENTS

DC power supply
10 mA current source
AVO meter
Resistors: 1kΩ (#3), 1kΩpot
Potentiometer: 1kΩ (#1)