

## LAB REPORT 1 V2

Lab Session:

Name 1:

SID:

Name 2:

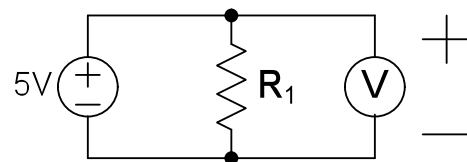
SID:

P=Predicted. Summarize your answers on the LAST SHEET and hand in at the BEGINNING of the lab. This is your PRELAB Report.

M=Measured. Hand in report at the end of the lab. This is your LAB Report.

### 1. Laboratory Power Supply

Set the laboratory supply for 5V output and 20mA maximum current and load it with resistor  $R_1=1k\Omega$  (Figure 0). Use the 0 ... 25V output.



**Figure 0** Power supply with resistive load and voltmeter.

- a) Verify the output voltage with the voltmeter. (Use the multimeter for all these measurements. The meter that is built into the supply is not as accurate).

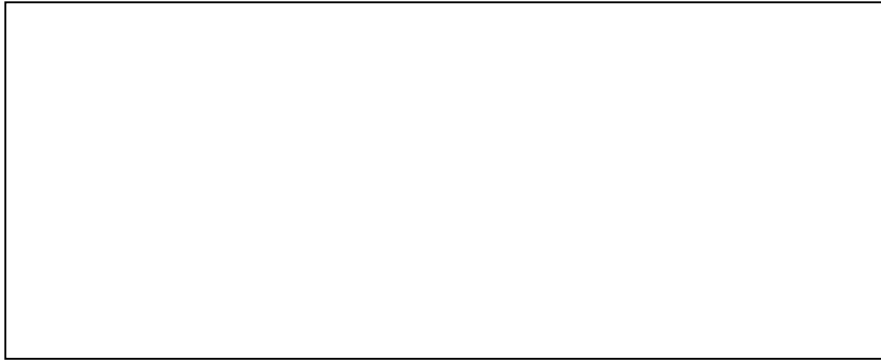
Predicted value: \_\_\_\_\_ V \_\_\_ of 1 **P**

Measured Value: \_\_\_\_\_ V \_\_\_ of 1 **M**

- b) Disconnect the voltmeter. What is the current flowing through resistor  $R_1$ ?

Predicted value: \_\_\_\_\_ A \_\_\_ of 1 **P**

Design a circuit for measuring the current flowing through  $R_1$ . Your diagram should include the supply, resistor, and the ampere meter.



\_\_\_ of 3 **P**

Measured Value: \_\_\_\_\_ A

\_\_\_ of 1 **M**

Explain discrepancies:

\_\_\_ of 2 **M**

- c) Replace  $R_1$  with a  $100\Omega$  resistor. What are the voltage across and current flowing through the resistor?

Predicted values: \_\_\_\_\_ V \_\_\_\_\_ A

\_\_\_ of 2 **P**

Measured values: \_\_\_\_\_ V \_\_\_\_\_ A

\_\_\_ of 1 **M**

Explain discrepancies:

\_\_\_ of 2 **M**

- d) Calculate the smallest value of  $R_1$  for which the supply output remains at 5V.

Calculated value of  $R_1$  \_\_\_\_\_  $\Omega$

\_\_\_ of 2 **P**

Measured voltage and current (note that the resistor gets warm or hot if you increase the voltage)

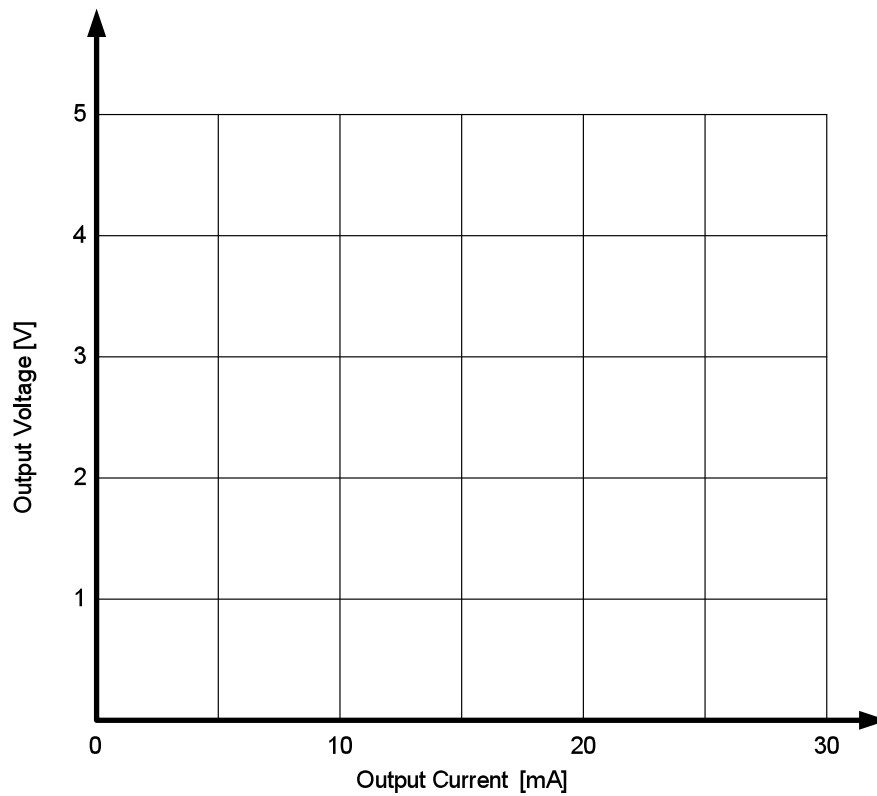
\_\_\_\_\_ V \_\_\_\_\_ A

\_\_\_ of 2 **M**

Explain discrepancies:

\_\_\_ of 2 **M**

- e) Measure the IV characteristic of the supply with the settings from part (a), using different values of  $R_1$  to get sufficient data points. Also transfer the measured data points from parts (b), (c), and (d) to the graph. Please draw neatly and use a ruler!



\_\_\_ of 3 **P**

\_\_\_ of 3 **M**

## SUGGESTIONS AND FEEDBACK

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Time for completing prelab:

Time for completing lab:

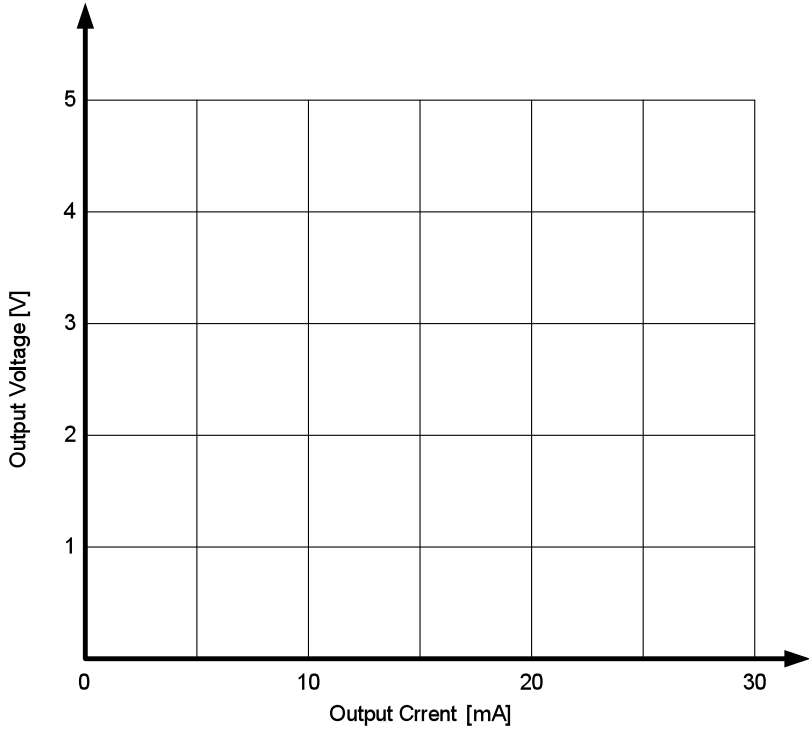
Please explain difficulties you had and suggestions for improving this laboratory. Be specific, e.g. refer to paragraphs or figures in the write-up. Explain what experiments should be added, modified (how?), or dropped.

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PRELAB SUMMARY

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Summarize your prelab (**P**) results here and turn this in at the BEGINNING of the lab session.

Problem	Result	Points
1a	V	___ of 1 <b>P</b>
1b	A	___ of 1 <b>P</b>
1b	<div style="border: 1px solid black; height: 180px; width: 100%;"></div>	___ of 3 <b>P</b>
1c	V A	___ of 2 <b>P</b>
1d	$\Omega$	___ of 2 <b>P</b>
1e		___ of 3 <b>P</b>