

# ECE 207L - REVIEW OF RESISTOR CIRCUITS - LAB 3 THEVENIN EQUIVALENTS

FALL 2003

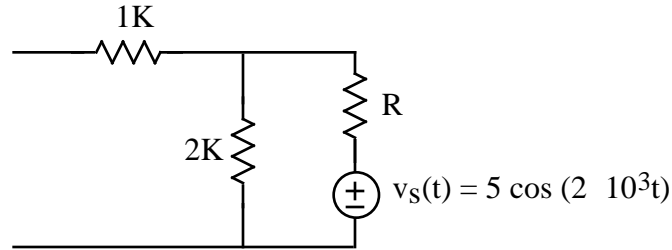
A.P. FELZER

## OBJECTIVE

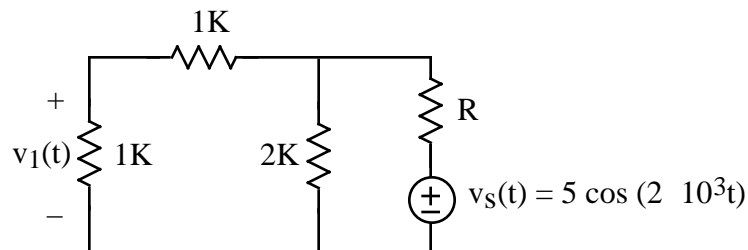
The objective of this lab is to review Thevenin's Theorem.

## LAB

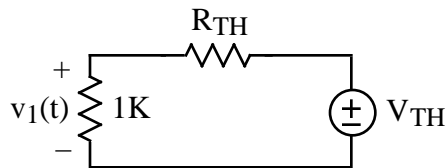
1. Given the following circuit



- a. Measure your resistor values. Compare with nominal values.
- b. Measure  $V_{TH}(t)$ .
- c. Use node equations to calculate  $V_{TH}(t)$ .
- d. Compare the amplitudes of your measured and calculated values for  $V_{TH}(t)$ .
- e. Measure  $R_{TH}$  by measuring the equivalent resistance of the circuit with  $v_s(t)$  set to zero (**replaced** by a short)
- f. Now make use of the following scheme to measure  $R_{TH}$  without setting  $v_s(t)$  to zero. First measure  $v_1(t)$  with a 1K resistor connected to the circuit as follows



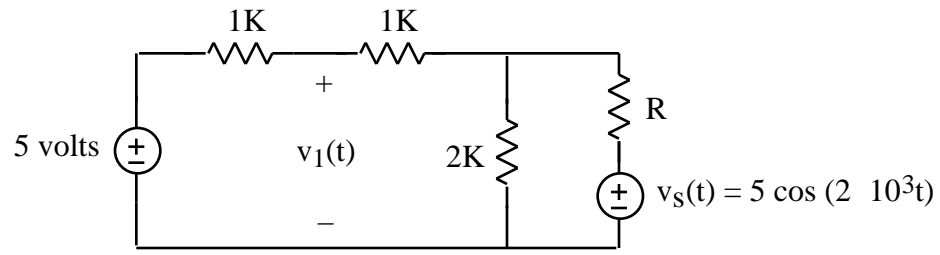
and then solve for  $R_{TH}$  in the following circuit



with both  $v_1(t)$  and  $V_{TH}(t)$  known

- g. Compare your values for  $R_{TH}$  in parts (e) and (f).

- h. Draw the corresponding Thevenin Equivalent circuit.
- i. Make use of your Thevenin Equivalent to predict  $v_1(t)$  in the following circuit



PARTNER 1:  $R = 1K$     PARTNER 2:  $R = 4.7K$

- j. Measure  $v_1(t)$  in your circuit
- k. Compare your measured and calculated amplitudes for  $v_1(t)$