

ECE 207L - FIRST ORDER RC CIRCUITS - LAB 14

PULSE RESPONSES OF FIRST ORDER RC CIRCUITS

FALL 2003

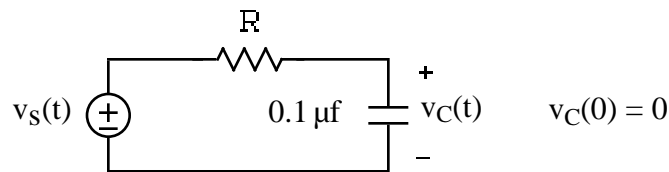
A.P. FELZER

OBJECTIVE

The objective of this lab is to calculate and measure the step and pulse responses of first order RC circuits

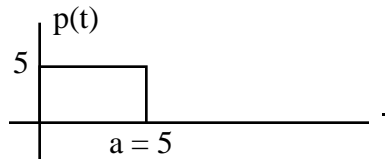
LAB

1. Given the following first order RC circuit



PARTNER 1: $R = 1\text{K}$ PARTNER 2: $R = 2\text{K}$

with pulse input $v_s(t) = p(t)$ as follows



- a. Measure your resistor and capacitor values. Compare with nominal values.
- b. Sketch what you expect the pulse responses of $v_C(t)$ and $v_R(t)$ look like.
- c. Sketch graphs of the pulse responses of $v_C(t)$ and $v_R(t)$ from what you see on the scope. Compare with what you expected in part (b)
- d. Measure enough values of $v_C(t)$ and $v_R(t)$ to get a good representation of the signals when the pulse is ON and then when its OFF
- e. Calculate equations for the pulse responses of $v_C(t)$ and $v_R(t)$
- f. Make use of your equations in part (e) to calculate $v_C(t)$ and $v_R(t)$ at the times you took measurements in part (d)
- g. Compare your calculated and measured values from parts (d) and (f)