

# ECE 207L - FIRST ORDER RC CIRCUITS - LAB 15

## PULSE TRAIN RESPONSES OF FIRST ORDER RC CIRCUITS

FALL 2003

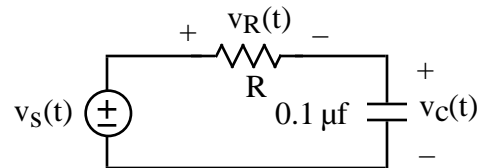
A.P. FELZER

### OBJECTIVE

The objective of this lab is to see how the frequency of a pulse train input affects the response of a first order RC circuit.

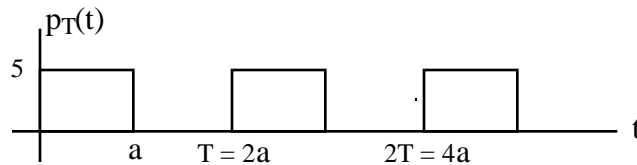
### LAB

1. Given the following first order RC circuit



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

with pulse train input as follows



- a. Measure your resistor and capacitor values. Compare with nominal values
- b. Describe what's going on in the circuit when the pulse is ON and when it's OFF
- c. Sketch at least three cycles of the pulse train input and pulse train response that you see on the scope when  $a = 1$ ,  $a = 2$  and  $a = 3$ . In each case find the maximum and minimum values of the steady state responses
- d. Verify that the pulse train responses in part (c) are periodic with the same frequencies as the corresponding pulse train inputs
- e. Describe the differences between the pulse train responses of  $v_C(t)$  when  $a = 1$  and  $a = 3$ . Then explain the differences