Ve216 Signals and Systems

Lab 1 Manual

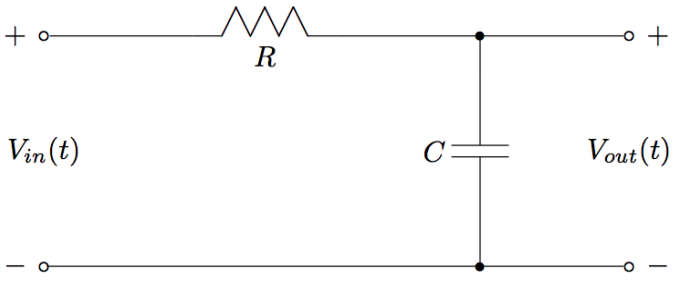
1 Objectives

- Measure the output response of the series RC circuit for a variety of inputs, including a step, a combination of a step and a ramp, and a sinusoid
- Compare results to those computed as part of pre-lab assignment

2 Procedure

Setup (some parts not needed in Proteus software)

- Function generator: Utility → Output Setup → Load → High Z
- Oscillator: Trigger Menu → 1.Trigger Mode → Basic; 2.Edge Trigger (Rising Edge); 3.Trigger Settings → DC Coupling
- RC circuit: R = 1 KΩ, and C = 1 μF



Part 1: Step Response (1 pic + bonus)

- Function generator:
  Square wave Vpp: 1V frequency: 100Hz
- Oscillator:
  CH1: 200mV/div CH2: 200mV/div Time: 2ms
- Bonus: Compare your results with the ideal case

Part 2: Pulse Response (2 pics)

(Note: you may also consider using the source in "Generator" panel.)

- Function generator: Pulse frequency: 100Hz
  1. Width: 1ms A: 100mV
  2. Width: 0.5ms A: 200mV

Part 3: Ramp Response (1 pic)

- Function generator:
  Ramp Vpp: 100mV frequency: 100Hz

Part 4: Sine Response (1 table + bonus)

- Function generator: 10 Vpp

Frequency (Hz)	Vout / Vin	Time Shift	Phase Shift
50			
500			
5k			

- Bonus: Compare your results with ideal case

3 Deliverables

Yout should submit a post-lab report containing the following:

1. Objectives
2. Theoretical background
3. Experiment procedures
4. Experimental results (numerical results, figures)
5. Error analysis, and discussion
6. Conclusion