Final Exam Overview

- C&L in the Time Domain
  - Standard Waveforms
    - Equation, plot, derivative, integral
    - Calculator
    - Variate
    - Exam 1
  - i=C dvdt => v= integral
  - v=Ldi/dt => i=integral
    - Variate
    - Exam 1

Second Order Parameters and RLC

- RLC
  - **Derive** transfer function
  - **Derive** A_o, zeta, ω_n in terms of RLC
  - Effects of parameters on response to step
  - Damping parameters

Second Order Sallen-Key Filter

- Draw the schematic
- Calculate the component values given filter parameters
- Calculate performance

Motor Characteristics

- Data=> m and τ
  - Like on HW and in Lab
  - $G(s)$

Closed Loop Characteristics

- Servo block diagram
- Overall system transfer function
- Identify key elements and signals
- Operation

- Variate
- Multisim

Proportional Control

- Different block diagram
- Identify and/or calculate key elements and signals
- Operation
  - Limitations (why)
  - Improvement

- Variate
- Multisim

PI Control

- Different block diagram
- Identify and/or calculate key elements and signals
- Operation
  - Limitations (why)
  - Improvement

- Variate
- Multisim

PI Control Software

- Discrete Integral Calculation
- Purpose of statements
  - Delay and interrupt
  - Scaling
  - CO calculation
  - 0<CO<100
  - SP is an analog input (10 bits)
  - CO is an analog out => really pulse width (8 bits)

Op Amp PI Controller

- Partial schematic given
  - Complete
  - Identify
  - Calculate