Engr228 Mid-term #2 Review Sheet Spring, 2020

Rules of engagement:

- This exam is designed to be completed by the average student in 60-90 minutes.
- This exam will be open book:
  - You **may** use all materials at your disposal including the internet, Zybooks, textbooks, lecture notes and videos, example problems and your calculator.
  - You **may not** consult anyone other than yourself about anything related to this test until 5pm on Wednesday, May 27.
- I will email the test to you at 2pm on Tuesday, May 26 in both pdf and Word formats.
- You are allocated a total of 3 hours, **in one sitting**, to work on your exam. You must monitor yourself and stay within this time frame. Once you open the test, you must submit the finished product to the D2L drop box **test2** within 3 hours.
- The drop box will close at 5pm on Wednesday, May 27 and late submissions will not be accepted.
- You may email me your test directly if D2L is not available.
- The front page of the test will ask you to sign your name. When you do, I will take this to indicate that you abided by these rules. You must sign your name to get a non-zero grade on the exam.
- Students with documented disabilities – you are responsible for providing your allowed accommodations, including appropriate time extensions. Contact me if you have questions.
- **I will be generally available, by email only, during the hours you may take the exam, except for 8pm – 6am.**

Chapter 5 – RC and RL First-Order Circuits

a. Capacitors
   a. Capacitance and its VI relationships
   b. Energy storage characteristics of capacitors
b. Inductors
   a. Inductance and its VI relationships
   b. Energy storage characteristics of inductors
c. Series and parallel combinations of inductors and capacitors
d. Response of the RC Circuit
e. Response of the RL Circuit
f. The concepts of transient and forced response
g. The complete response of RL and RC circuits

Chapter 6 – RLC Circuits

a. Initial and final conditions
b. Parallel and Series RLC Circuits
   1. Natural response
      a. Over damped
      b. Critically damped
      c. Under damped
   2. Step response
   3. Complete response

Chapter 7 – Sinusoidal Steady-State Analysis by Phasor Methods

a. Review of signal properties
b. Review of complex numbers and operations
c. Define the notion of a complex phasor for representing currents and voltages
d. Phasor impedances
e. Circuit analysis using phasors
    1. Node analysis
    2. Mesh analysis
    3. Source transformations
    4. Thévenin and Norton equivalent circuits

Laboratories

Lab 4 – DC Attenuator Design and Measurement
Lab 5 – First Order Circuit Responses
Lab 6,7 – Forced Response of a Series RLC Circuit