

## EE120 Final Exam: Student Objectives Review Sheet

### What you have access to:

- Matlab
- Matlab's built-in (not internet) help
- Your textbook (you are not allowed to share the textbook with someone else taking the same exam at the same time, i.e. no passing anything back and forth between students)
- Your personal notes and the past labs that your group has completed

### What you do not have access to: everything else. For example, no access to:

- Your calculator
- The internet
- Any other people
- Any other people's work, including labs and notes

### What people who have taken my finals would tell you

- His tests are straightforward; there are no "tricks".
- His average test grade is in the low 80's.
- His tests are similar, but not identical, to the work you have done during the semester for homework. As long as you have worked the homeworks independently, you will do fine. Cramming in the last week won't make up for not keeping up with the work during the semester.
- He does not test minute details; he tests major topical understanding.
- His tests start very easy and become progressively more difficult.
- His student objective review sheets are the best tools to guide your preparation.
- Do not leave any questions blank since he gives partial credit.
- If you get stuck at the start of a problem, rather than leave the rest of it blank say, for example, "assume  $i=6A$ " and then keep working the rest of the problem to secure as much partial credit as possible.

There will be five questions during the exam. They will be from these areas:

**1. Chapter 2: Matlab as a calculator**

Basic functions: +, -, \*, /, sqrt, powers, trig functions, exponential, log functions

Creating vectors and matrices

Complex numbers in polar, rectangular, and complex exponential form

Decibels

**2. Chapter 3: Graphics**

Plot 2D functions (e.g.  $y=x^2$ ,  $x < 0$  and  $y=x^3$ ,  $x \geq 0$ , for  $-2 \leq x \leq 2$ )

Create a scatter plot given data in the form of  $\{x,y\}$  pairs

Plot multiple lines in a single plot

Create multiple plot axes in a single frame

Modify the appearance of a plot's colors, markers, line widths

Add plot decorations including titles and text along the axes

**3. Chapter 4: Simple Programming**

Create a simple program consisting of:

- a function declaration that takes some number of inputs (0, 1, or 2) and returns some number of outputs (0, 1, or 2)
- a single line of code to solve a given (simple) problem

**4. Chapter 5: Complex Programming**

Solve a more complex programming problem that requires looping

**5. Chapter 6: Circuit Simulation**

Given a schematic, simulate a circuit that requires one of the following simulation methods:

- DC operating point (like using a voltmeter in a circuit with unchanging voltages)
- Transient analysis (like using an oscilloscope in a circuit with changing voltages)
- AC sweep simulation (like using a Bode Plot to show how a circuit attenuates sinusoidal signals of different frequencies)

Get a good night's sleep before the exam. Stay hydrated - you can bring a covered container of water or coffee into the exam room. You are not allowed to bring food into the classroom without prior permission, but you can leave an energy bar in your book bag and eat it in the hallway for an energy boost halfway through the exam. You will have three hours; most students typically complete it within two hours.