Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (please print)

Signature: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

ECE 3355 -- Quiz #2

June 22, 2016

Keep this quiz closed and face up until you are told to begin.

1. This quiz is closed book, closed notes. You may use one 8.5” x 11” crib sheet, or its equivalent.

2. Show all work on these pages. Show all work necessary to complete the problem. A solution without the appropriate work shown will receive no credit. A solution which is not given in a reasonable order will lose credit.

3. It is assumed that your work will begin on the same page as the problem statement. If you choose to begin your work on another page, you must indicate this on the page with the problem statement, with a clear indication of where the work can be found. **If your work continues on to another page, indicate clearly where your work can be found. Failure to indicate this clearly will result in a loss of credit.**

4. Show all units in solutions, intermediate results, and figures. Units in the quiz will be included between square brackets.

5. Do not use red ink. Do not use red pencil.

6. You will have 30 minutes to work on this quiz.

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_/20

Room for extra work

Assume that an oscilloscope input can be modeled as a 780[k] resistance in series with a 27[mH] inductance.

1. Design a 13:1 *compensated attenuator* that can be used as an oscilloscope probe. Through your oscilloscope probe the input impedance of the oscilloscope should be “compensated” by the probe so that it does not distort the measurement.
2. Find the phase of the input impedance seen by a source connected to the combination of the oscilloscope probe you designed and the oscilloscope, at 5[MHz].

Room for extra work

Solution:

Assume that an oscilloscope input can be modeled as a 780[k] resistance in series with a 27[mH] inductance.

1. Design a 13:1 *compensated attenuator* that can be used as an oscilloscope probe. Through your oscilloscope probe the input impedance of the oscilloscope should be “compensated” by the probe so that it does not distort the measurement.
2. Find the phase of the input impedance seen by a source connected to the combination of the oscilloscope probe you designed and the oscilloscope, at 5[MHz].

