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

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

ECE 3455 -- Quiz #2

February 22, 2010

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 20 minutes to work on this quiz.

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

Room for extra work

A new oscilloscope has a signal input which can be modeled as a 1[M] resistance in series with a 460[nH] inductance. Design an oscilloscope probe that could be used with this new oscilloscope as a compensated attenuator with a factor of 16:1. In other words, design a 16:1 oscilloscope probe that could be used with this new oscilloscope. Prove that your design will meet the goal of an oscilloscope probe by performing an appropriate analysis. Explain in two or three sentences how your proof demonstrates that the goal has been met.

Room for extra work

ECE 3455 -- Quiz #2 – February 22, 2010 – Solution

A new oscilloscope has a signal input which can be modeled as a 1[M] resistance in series with a 460[nH] inductance. Design an oscilloscope probe that could be used with this new oscilloscope as a compensated attenuator with a factor of 16:1. In other words, design a 16:1 oscilloscope probe that could be used with this new oscilloscope. Prove that your design will meet the goal of an oscilloscope probe by performing an appropriate analysis. Explain in two or three sentences how your proof demonstrates that the goal has been met.

