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

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

ECE 2300 – Quiz #2

September 24, 2009

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 35 minutes to work on this quiz.

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

Room for extra work

A device can be modeled by a voltage source in series with a resistance. The device is shown in Figure 1, and a plot of the current through the device as a function of the voltage across the device is shown in Figure 2.

1. Find the model for the device, and draw it, labeling terminals a and b.
2. Assume that this device is placed across a 5[V] voltage source. What are all the possible solutions for the current through the device ?
3. Assume that three identical devices with this behavior are connected in parallel with a 5[V] voltage source. The orientation, or polarity, of each of the devices is arbitrary. Find all the possible solutions for the power delivered by the 5[V] voltage source in this case.

 

Room for extra work

ECE 2300 -- Quiz #1 – September 24, 2009 – Solution

A device can be modeled by a voltage source in series with a resistance. The device is shown in Figure 1, and a plot of the current through the device as a function of the voltage across the device is shown in Figure 2.

1. Find the model for the device, and draw it, labeling terminals a and b.
2. Assume that this device is placed across a 5[V] voltage source. What are all the possible solutions for the current through the device ?
3. Assume that three identical devices with this behavior are connected in parallel with a 5[V] voltage source. The orientation, or polarity, of each of the devices is arbitrary. Find all the possible solutions for the power delivered by the 5[V] voltage source in this case.

 

