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

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

ECE 2300 – Quiz #1

September 9, 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 30 minutes to work on this quiz.

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

Room for extra work

A device can be modeled as a voltage source in series with a resistance. The device is shown in Figure 1, and its voltage vs current relationship is shown in Figure 2. The device is then connected to a 7[V] voltage source, as shown in Figure 3. Note that the connections are shown by the terminal labels a and b.

1. Find the power delivered by the 7[V] voltage source in Figure 3.
2. Assume that the charge carriers in this circuit are electrons. Which way are the electrons moving through the device in Figure 3?
3. Assume that the charge carriers in this circuit are electrons. Are the electrons gaining or losing energy as they move through the device in Figure 3? Explain your answer.

  

Room for extra work

ECE 2300 -- Quiz #1 – September 9, 2010 – Solution

A device can be modeled as a voltage source in series with a resistance. The device is shown in Figure 1, and its voltage vs current relationship is shown in Figure 2. The device is then connected to a 7[V] voltage source, as shown in Figure 3. Note that the connections are shown by the terminal labels a and b.

1. Find the power delivered by the 7[V] voltage source in Figure 3.
2. Assume that the charge carriers in this circuit are electrons. Which way are the electrons moving through the device in Figure 3?
3. Assume that the charge carriers in this circuit are electrons. Are the electrons gaining or losing energy as they move through the device in Figure 3? Explain your answer.

