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

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

ECE 2300 – Quiz #2

September 25, 2014

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

Use the circuit diagram given below to solve this problem.

1. Find *vQ*.
2. Find the power delivered by the 15[V] voltage source.



Room for extra work

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

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

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September 25, 2014

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September 25, 2014

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1. Find *vQ*.
2. Find the power delivered by the 15[V] voltage source.



Room for extra work

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

ECE 2300 – Quiz #2

September 25, 2014

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

Room for extra work

Use the circuit diagram given below to solve this problem.

1. Find *vQ*.
2. Find the power delivered by the 15[V] voltage source.



Room for extra work

ECE 2300 -- Quiz #2 – September 25, 2014 – Solution – Version 1.

Use the circuit diagram given below to solve this problem.

1. Find *vQ*.
2. Find the power delivered by the 15[V] voltage source.



Solution:

1. We note that the current through the 4.7[k] resistor is zero, since it is open-circuited. We write KVL around the upper triangle, to get  
      
   Solving we get  
      
   Then, recognizing as well that the current through the 6.8[k] resistor is also zero, we can write KCL for the bottom node in the center of the diagram, to get  
      
   With this, we write KVL to get  
   



1. For the 15[V] voltage source, since we know that that the voltage of the voltage source and *iX* are in the active sign convention for the voltage source, that  
   



For a 3.8[mA] current source, we have

   


   
and



For a 3.6[mA] current source, we have

   


   
and



For a 3.5[mA] current source, we have

   


   
and

