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

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

ECE 3355 -- Quiz #6

December 4, 2012

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

 Design a circuit that could be used to generate a 5[V] peak-to-peak triangle wave with a repetition frequency of 1[kHz]. You may assume that you have an unlimited supply of transistors, at room temperature, with a *transistor*= 100. You may assume that you have an unlimited supply of ideal op amps, and dc power supplies that are variable from -50[V] to +50[V]. You may assume that you have an unlimited supply of ideal diodes. You may use any value of resistor, capacitor or inductor, in unlimited quantities. Explain how your design works, and your design choices, using complete sentences.

 If it is helpful to you in your design, allow me to remind you that the formula for the period of the astable multivibrator in the textbook and in your laboratory experiment is



Room for extra work

ECE 3355 -- Quiz #6 – December 4, 2012 – Solution

 Design a circuit that could be used to generate a 5[V] peak-to-peak triangle wave with a repetition frequency of 1[kHz]. You may assume that you have an unlimited supply of transistors, at room temperature, with a *transistor*= 100. You may assume that you have an unlimited supply of ideal op amps, and dc power supplies that are variable from -50[V] to +50[V]. You may assume that you have an unlimited supply of ideal diodes. You may use any value of resistor, capacitor or inductor, in unlimited quantities. Explain how your design works, and your design choices, using complete sentences.

 If it is helpful to you in your design, allow me to remind you that the formula for the period of the astable multivibrator in the textbook and in your laboratory experiment is



