Peoplesoft ID Number: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

ECE 2202 – Quiz #5 – 1pm

April 29, 2021

1. You may use one 8.5” x 11” crib sheet, or its equivalent. Do not communicate with anyone except Dr. Dave Shattuck while you are taking this quiz.

2. Show all work necessary to complete the problem. Use additional sheets of paper as needed. A solution without the appropriate work shown will receive no credit. A solution which is not given in a reasonable order will lose credit. Include this page with your Peoplesoft ID Number, or include a different, separate page with your Peoplesoft ID Number. Do not write your name on this quiz. Failure to follow these rules will result in points being deducted.

3. Show all units in solutions, intermediate results, and figures. Units in the quiz will be included between square brackets.

4. Do not use red ink. Do not use red pencil.

5. You will have 45 minutes to work on this quiz, plus additional time to print, scan and email your work. Use a filename which is your Peoplesoft ID Number, followed by Quiz5. Post your solution on Blackboard, in the same way you submit homework assignments. It must be submitted by 2:20pm, or points will be deducted.

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A source, a load, and a line connecting them are in steady-state.

The source is sinusoidal, has an rms voltage of 230[Vrms], and operates at 50[Hz]. The phase of the source is arbitrary; in other words, you may choose any phase for the source that you wish.

The load can be modeled as a 19[Ohm] resistor in parallel with a 220[microFarad] capacitor.

The line can be modeled as a 7.2[Ohm] resistor in series with a 15[milliHenry] inductor.

1. Find the resistance of the load.
2. Find the reactance of the load.
3. Find the real power absorbed by the load.
4. Find the reactive power absorbed by the load.
5. Find the complex power absorbed by the load.
6. Find the power factor for the load. Note that in giving a power factor, you must specify whether the value is leading or lagging.
7. Find the reactive power delivered by the source.
8. Find the susceptance of the line.

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Diagram

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