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

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

ECE 2202 – Exam 2

November 10, 2018

**Keep this exam closed until you are told to begin.**

1. This exam 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 that is not given in a reasonable order will lose credit. Clearly indicate your answer (for example by enclosing it in a box).

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 exam will be included between square brackets.

5. Do not use red ink. Do not use red pencil.

6. You will have 90 minutes to work on this exam.

1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_/35

2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_/30

3. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_/35

 Total = 100

Room for extra work

1. {35 Points} Use the circuit shown below to solve. The switch had been closed for a long time before it opened at *t* = 0. The energy stored in inductor *LD* at *t* = 0 was zero. Find the energy stored in inductor *LB* at *t* = 1.5[s].



# Room for extra work

2. {30 Points} The switch SWA was closed for a long time, and switch SWB was open for a long time, before *t* = 0. Then, switch SWA opened at *t* = 0.
Two [milliseconds] later switch SWB closed. Find *iX*(5[ms]).



Room for extra work

3. {35 Points} The circuit shown below is in steady state. The sources are given as



1. Redraw this circuit in the phasor domain. Do not simplify the circuit in this step.
2. Find the Thevenin impedance as seen by the *vE* voltage source.
3. Find the Thevenin reactance as seen by the *vE* voltage source.



Room for extra work

1. {35 Points} Use the circuit shown below to solve. The switch had been closed for a long time before it opened at *t* = 0. The energy stored in inductor *LD* at *t* = 0 was zero. Find the energy stored in inductor *LB* at *t* = 1.5[s].







2. {30 Points} The switch SWA was closed for a long time, and switch SWB was open for a long time, before *t* = 0. Then, switch SWA opened at *t* = 0.
Two [milliseconds] later switch SWB closed. Find *iX*(5[ms]).





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1. Redraw this circuit in the phasor domain. Do not simplify the circuit in this step.
2. Find the Thevenin impedance as seen by the *vE* voltage source.
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We convert the sine function to a cosine function, and then go to the phasor domain.





