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

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

ECE 2201 – Exam 1

March 2, 2024

Keep this exam closed and face up until you are told to begin.

1. This exam is closed book, closed notes. You may use any calculator. You may **not** use a cell phone, tablet computer, nor laptop computer. You may have a crib sheet in the form of one 8 ½” x 11” piece of paper, with material written on both sides.
2. Print your name, and provide your signature above.
3. 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. You may separate the pages as you work.
4. Show all units in solutions, intermediate results, and figures. Units in the exam will be included between square brackets.
5. If the grader has difficulty following your work because it is messy or disorganized, you will lose credit.
6. Do not use red ink. Do not use red pencil.
7. You will have 100 minutes to work on this exam.

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

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

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

Total = 100

Room for extra work

1. (35 points) Use the circuit given below to solve. The equations for some selected voltages and currents are shown. The charge carriers are electrons.

1. Find *vA(t)*, as a function of time, *t*.
2. Find *vA*(2[s]).
3. Find the power absorbed by the voltmeter at *t* = 3[s].
4. Find the energy delivered by the *vA(t)* voltage source during the third [second], counting [seconds] starting at *t* = 3[s].
5. Which way are the electrons moving through the ammeter at *t* = 4[s]? Explain your answer, using complete sentences.
6. Find the value for time, *t*, when *iE(t)* is zero.



Room for extra work

Room for extra work

2. (30 points) Use the circuit below to solve.

a) Find the equivalent resistance with respect to terminals C and D.

b) Find the equivalent resistance as seen by terminals A and B.



Room for extra work

3. (35 points) Use the circuit below to solve.

a) Find *vX*.

b) Find the power delivered to the 1.9[mS]*vA* dependent current source.

c) Find the power absorbed by the 2.5[kW]*iB* dependent voltage source.



Solutions:















