ECSE-200 Electric Circuits 1

Quiz #4 (Feb. 8, 2019)

**LAST NAME** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ **MCGILL ID#** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**FIRST NAME­­­­­­­­­**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**SIGNATURE**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

* ***Only Faculty standard calculator accepted***
* ***No cellphone allowed***
* ***Show all your work***
* ***Clearly indicate your final answer with SI units and SI multiplier***
* ***You have 45 minutes to complete this quiz***

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**Question 1.** Consider the circuit shown below. Answer the following questions.

1. Using source transformation, simplify the circuit at terminals *AB* into its Norton’s circuit equivalent. [3 pt]
2. What resistance value should a load resistor connected across terminals *AB* have for the voltage *vAB* to be 5 V? [2 pt]
3. If the circuit is loaded with an element connected across terminals *AB* that has infinite conductance (), what is the power dissipated by the Thévenin resistor in your Norton’s circuit equivalent? [1 pt]

A screenshot of a cell phone

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**Question 2**. Consider the two circuits shown. Answer the following questions.

A close up of a logo

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1. If you are solving for the circuit variables in the **left** circuit, which circuit method requires fewer equations, the node voltage method or the mesh current method? Justify your answer. [1 pt]
2. If you are solving for the circuit variables in the **right** circuit, which circuit method requires fewer equations, the node voltage method or the mesh current method? Justify your answer. [1 pt]
3. What is the power dissipated by the dependent current source in the **right** circuit? [3 pt]
4. What is the power dissipated by the independent voltage source in the **left** circuit? [3 pt]

Extra working space