

Assignment 1C (55 marks) – Lab Week Four Hand-In Sheets

/55 marks

Due: End of your week Five's lab period – Week of 11 – 17 Feb 2018**Name:** _____ **Write in your Lab Day and Time (e.g. Wed 10 – 12)****Student Number:** _____**PURPOSE OF LAB:**

The purpose of this lab exercise is to exercise your understanding of calculating Voltage, Current and Resistance in Parallel Circuits and Series-Parallel Circuits. While there is no demonstration for any of the components of this lab, students are encouraged to build the circuits in Multisim to check their solutions and ask questions where results differ.

Instructions

To gain credit for this portion of Week Four's lab, independently complete the questions in the lab exercise and submit this entire document and all your calculations for Question Three into your lab portfolio by the lab period indicated at the top of this page. Marks for each question are annotated in the circle beside the question.

PLEASE STAPLE THE PAGES TOGETHER.

Question One (Twelve Marks).

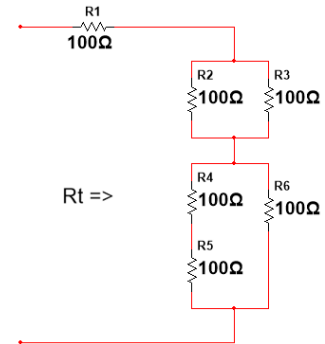
- a. (3 marks) Nearly sketch a circuit that corresponds to the given General Equation for R_t .

$$R_t = R_5 + R_3 // [(R_1 // R_2) + R_4]$$

- b. (3 marks) Nearly sketch a circuit that corresponds to the given General Equation for R_t .

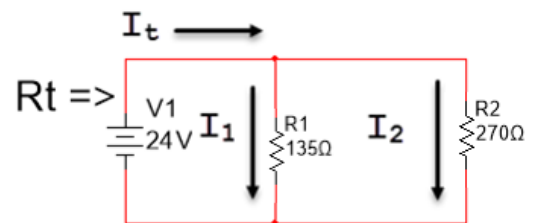
$$R_t = R_1 // [R_2 + R_3 // (R_4 + R_5)]$$

- c. (3 marks) Given the following circuit, create the General Equation for R_t .



- d. (3 marks) Calculate the value of R_t from c. above. Show all work, including formulas used.

Question Two (8 Marks). Given the following simple parallel circuit, calculate the expected circuit values below – show all formulas and calculations and units. Place a rectangular box around your answers.



- a. (2 marks) R_t

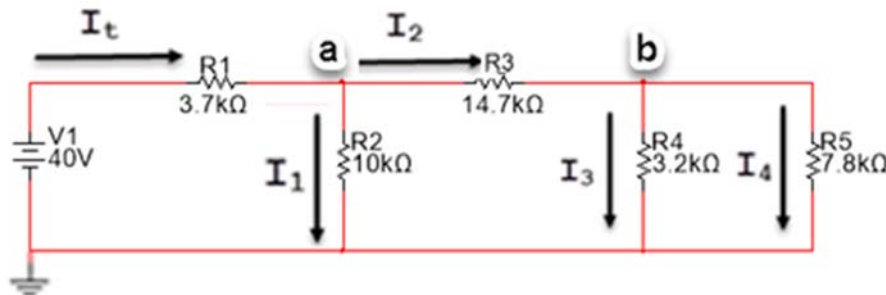
- b. (2 marks) I_t

- c. (2 marks) I_1

- d. (2 marks) I_2

For the following questions, you must show all work for full credit by submitting not only this answer sheet, but your neatly *handwritten answers on a separate sheet of 8.5" x 11" paper* – Include all formulas, their calculations and clearly indicate your answers in your rough work by placing a rectangular box around the answer. Use correct engineering prefixes (e.g. k, m, μ , p, M) and correct symbols (e.g. V, A, Ω , W) in all your answers. Pay attention to your CaPiTaLiZaTiOn (example MV \neq mV, K \neq k).

Question Three (35 marks). Given the circuit below, complete the following table by first calculating the applicable values; choosing the value that most closely matches the calculated one and circling its associated letter answer in the **Letter Answer** column. Marks are awarded for correct letter answers placed in the specified column, along with your hand-written answers.



Don't forget to attach **ALL** of your *handwritten* answers for these questions.

No calculations; No marks!

Only handwritten work is eligible for credit!

Part	Question	Circle the Correct Letter Answer	Marks
a.	The calculated value of R_T is: a. 2.3 k Ω b. 10.0 k Ω c. 6.3 k Ω d. 3.7 k Ω	a b c d	5
b.	The calculated value of I_T is: a. 4.0 mA b. 400 μ A c. 17.4 mA d. 6.3 mA	a b c d	5
c.	The calculated value of V_a is: a. 40 V b. 3.4 V c. 21.8 V d. 25.2 V	a b c d	5
d.	The calculated value of I_1 is: a. 2.52 mA b. 4.0 mA c. 0.34 mA d. 2.18 mA	a b c d	5
e.	The calculated value of I_2 is: a. 3.66 mA b. 1.82 mA c. 1.48 mA d. 4.0 mA	a b c d	5
f.	The calculated value of V_b is: a. 0 V b. 3.4 V c. 21.8 V d. 1.5 V	a b c d	5
g.	The calculated value of I_4 is: a. 0.436 μ A b. 0.436 A c. 436 mA d. 436 μ A	a b c d	5