

ELE 202

Electric Circuit Analysis

LAB COVER PAGE for **Part I** submission.

Lab #:		Lab Title:	
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Last Name:	
First Name:	

Student #:	
Signature:	Sayeed Ahamad

Section #:	
Submission date and time:	
Due date and time:	

Document submission for Part I:

- A completed and signed “COVER PAGE – **Part I**” has to be included with your submission. The report will not be graded if the signed cover page is not included.
- Your completed handwritten pages of **Section 4.0** should be scanned (via a scanner or phone images), together with the required MultiSIM images. **Note:** *MultiSIM results must be generated using the Department’s licensed version of MultiSIM, and the captured screenshots should show your name (at the center-top) and the timestamp (at the bottom-right corner of your screen).*
- Collate and create a *.pdf* or *.docx* file of the above, and upload it via D2L **any time prior to the start of your scheduled lab**. Upload instructions are provided on D2L.

Zero marks will be assigned for the entire lab if this Part I is not submitted prior to your scheduled lab.

**By signing above, you attest that you have contributed to this submission and confirm that all work you have contributed to this submission is your own work. Any suspicion of copying or plagiarism in this work will result in an investigation of Academic Misconduct and may result in a “0” on the work, an “F” in the course, or possibly more severe penalties, as well as a Disciplinary Notice on your academic record under the Student Code of Academic Conduct, which can be found online at: www.ryerson.ca/senate/current/pol60.pdf.*

4.0

(a)

R	V _R	4V		6V		8V		10V		15V	
		Theory	Multi	Theory	Multisim	Theory	Multi	Theory	Multi	Theory	Multi
2.2kΩ	I _R (mA)	1.82	1.82	2.73	2.73	3.64	3.64	4.55	4.55	6.82	6.82
3.3kΩ	I _R (mA)	1.21	1.21	1.82	1.82	2.42	2.42	3.03	3.03	4.55	4.55

$$V = IR \quad V = IR \quad V = IR \quad V = IR \quad V = IR$$

$$\frac{4}{2200} = I \quad \frac{6}{2200} = 2.73 \text{ mA} \quad \frac{8}{2700} = 3.64 \text{ mA} \quad \frac{10}{2200} = 4.55 \text{ mA} \quad \frac{15}{2200} = 6.82 \text{ mA}$$

$$= 1.82 \text{ mA}$$

$$V = IR \quad V = IR \quad V = IR \quad V = IR \quad V = IR$$

$$\frac{4}{3300} = 1.21 \text{ mA} \quad \frac{6}{3300} = 1.82 \text{ mA} \quad \frac{8}{3300} = 2.42 \text{ mA} \quad \frac{10}{3300} = 3.03 \text{ mA} \quad \frac{15}{3300} = 4.55 \text{ mA}$$

iv) Theoretical and Multisim readings were found to be exactly similar.

b)

V _E	I (mA)		V _{AB} (Volts)		V _{BC}		V _{CD}		ΣV	
	Theory	Multi	Theory	Multi	Theory	Multi	Theory	Multi	Theory	Multi
15V	2.31	2.31	7.62	7.62	5.06	5.07	2.31	2.31	14.99	15

$$V = IR \quad V_{AB} = 2.31 \times 10^{-3} (3.3 \times 10^3) \quad V_{BC} = 2.31 \times 10^{-3} (2.2 \times 10^3)$$

$$\frac{15}{(2.3 + 1.2 + 1)} = 2.31 \text{ mA} \quad = 7.623 \text{ V} \quad = 5.06 \text{ V}$$

$$V_{CD} = 2.31 \times 10^{-3} (1 \times 10^3)$$

$$2.31$$

iii) Multisim and Theoretical readings are same.



Date: 6 Oct 2019

V _E	Design Values $\Rightarrow R_1, 1k\Omega$				$R_2, 1k\Omega$				$R_3, 1k\Omega$			
	I (mA)		V _{ab}		V _{bc}		V _{cd}		V _{de}		V _{ef}	
	Theory	Multi	Theory	Multi	Theory	Multi	Theory	Multi	Theory	Multi	Theory	Multi
15V	5	5	15	15	5	5	5	5	5	5	5	5
$I = I_1 + I_2 + I_3$												
$R_1 = \frac{5}{I_1}$ $R_2 = \frac{5}{I_2}$ $R_3 = \frac{5}{I_3}$												

$$I_1 = I_2 = I_3 = 5mA \Rightarrow R_1 = R_2 = R_3 = 1k\Omega$$

(ii) Readings are similar.

V _E	I ₁ (mA)		I ₂ (mA)		I ₃ (mA)		ΣI	
	Theory	Multi	Theory	Multi	Theory	Multi	Theory	Multi
15V	26.36	26.36	4.55	4.55	6.52	6.52	15	15

$$R_T = 568.97\Omega$$

$$E = I R_T$$

$$\frac{15}{568.97} = I_T$$

$$I_{(total)} = 26.36mA$$

$$V = IR$$

$$\frac{15}{3300} = I_1$$

$$I_1 = 4.55mA$$

$$V = IR$$

$$\frac{15}{2200} = 6.82mA$$

$$V = IR$$

$$\frac{15}{1000} = 15mA$$

(iii) Readings are exactly similar.

