ISTANBUL COMMERCE UNIVERSITY

DERPARTMENT OF ELECTRICAL-ELECTRONICS ENGINEERING

EEE202 ELECTRO-TECHNICH LABORATORY

PART 1 EXPERIMENTS

Contents

EXPERIMENT: 1.1
EXAMINATION OF OHM'S LAW
EXPERIMENT: 1.2
EXAMINATION OF KIRCHHOFF'S VOLTAGE LAW5
EXPERIMENT: 1.3
EXAMINATION OF KIRCHHOFF'S CURRENT LAW7
EXPERIMENT: 1.4
EXAMINATION OF SERIAL CONNECTED RESISTORS
EXPERIMENT: 1.5
EXAMINATION OF PARALLEL CONNECTED RESISTORS1
EXPERIMENT: 1.6
EXAMINATION OF MIXED CONNECTED RESISTORS11

EXPERIMENT: 1.1 EXAMINATION OF OHM'S LAW

EXPERIMENTAL PROCEDURE:

Plug the Y-0016/002 module. Make the circuit connections as in figure 1.



Figure 1

Adjust the power supply's voltage potentiometers to minimum (**to left**), and the current potentiometers to maximum (**to right**). Apply the power to the circuit.

1- Adjust the power to the values in Table 3 and write the current values at every stage respectively.

NUMBER	(VOLT)	I (mA)	V / A
1	1.0	10	100
2	2.0		
3	3.0		
4	4.0		
5	5.0		
6	6.0		

Table 3

2- Calculate the V/A ratio at every step and write them to the Table 3. What is this value (**100**) which is the same at every stage?

3- Cut the power of circuit and open the J1 short circuit. This time short circuit J2. Calculate the mathematical value of R2 resistance.

NOTE=This experiment can be repeated with various voltage levels below 6,0Volt.

EXPERIMENT: 1.2 EXAMINATION OF KIRCHHOFF'S VOLTAGE LAW

EXPERIMENTAL PROCEDURE:

Plug the Y-0016/002 module make the circuit connections as in figure 2.



Figure 2

Adjust the power supply's voltage potentiometers to minimum (**to left**), and the current potentiometers to maximum (**to right**). Apply the power to the circuit.

1- Adjust the power to the values in Table 4 and write the voltage values at every stage respectively.

NUMBER	(VOLT)	E1 (VOLT)	E2 (VOLT)	E3 (VOLT)
1	3			
2	6			

Table 4

2- Does the Kirchhoff' voltage law equation is maintained at every stage? Calculate.

3- Calculate the total resistance of circuit.

4- Unplug the adjustable power supply from the circuit. Measure the total resistance (**between the sockets**) with the help of an ohmmeter. Compare it with the value you previously calculated.

NOTE= The result may be approximate. The reason for this is the tolerances of resistors.

EXPERIMENT: 1.3 EXAMINATION OF KIRCHHOFF'S CURRENT LAW

EXPERIMENTAL PROCEDURE:

Plug the Y-0016/002 module make the circuit connections as in figure 3.



Figure 3

Adjust the power supply's voltage potentiometers to minimum (**to left**), and the current potentiometers to maximum (**to right**). Apply the power to the circuit.

1- Adjust the power to the values in Table 5 and write the current values at every stage respectively.

NUMBER	(VOLT)	I1 (mA)	I2 (mA)	I (mA)
1	2			
2	4			
3	6			

Table 5

2- Is the total current flowing into node (**I**) equal to the total current flowing out of the node (**I1-I2**)? Calculate for every step.

3- Calculate the total resistance (**R**) of circuit.

4- Calculate the circuit current from Ohm's Law for every step. Compare the results with the results of Kirchhoff's current law.

EXPERIMENT: 1.4 EXAMINATION OF SERIAL CONNECTED RESISTORS

EXPERIMENTAL PROCEDURE:

Plug the Y-0016/003 module. Make the circuit connections like in figure 4.



Figure 4

1- Write the value of resistance displayed by Ohmmeter.

2- R1=1K, R5=2K and R3=10K. So calculate the total resistance (**R**).

3- Compare the value you calculated and the value displayed by Ohmmeter. Why is there a difference?

NOTE: You can do new experiments by making different serial connections with the six resistors in the module.

EXPERIMENT: 1.5 EXAMINATION OF PARALLEL CONNECTED RESISTORS

EXPERIMENTAL PROCEDURE:

Plug the Y-0016/003 module. Make the circuit connections as in figure 5



Figure 5

1- Write the resistance value displayed by the Ohmmeter.

2- R2=2K and R5=2K, calculate the total resistance (**R**).

3- Compare the value you calculated and the value Ohmmeter displayed. Why is there a difference?

NOTE: You can do new experiments by making different parallel connections with the six resistors in the module.

EXPERIMENT: 1.6 EXAMINATION OF MIXED CONNECTED RESISTORS

EXPERIMENTAL PROCEDURE:

Plug the Y-0016/003 module. Make the circuit connections as in figure 6.



Figure 6

1- Write the resistance value displayed by Ohmmeter.

2- R1=1K, R4=1K and R2=2K. Calculate the total resistance of circuit.

3- Compare the value you calculated and the value Ohmmeter displayed. Why is there a difference?

NOTE: You can do new experiments by making different mixed connections with the six resistors in the module.