

# YILDIRIM BEYAZIT UNIVERSITY

## CENG 205 LABORATORY

### EXPERIMENT 3

---

#### Objective

Validate Kirchhoff's Voltage Law (KVL) and Kirchhoff's Current Law (KCL).

#### Theory

- **KVL** theory states that the algebraic sum of all the voltages around any closed path is zero.
- **KCL** theory states that the algebraic sum of all the currents at any node is zero.

#### Laboratory Exercises:

- 1) Assume the circuit in figure 1 with resistor values of  $R_1 = 1 \text{ k}\Omega$ ,  $R_2 = 2.4 \text{ k}\Omega$ ,  $R_3 = 1.2 \text{ k}\Omega$ ,  $R_4 = 1 \text{ k}\Omega$ ,  $R_5 = 1.2 \text{ k}\Omega$ . Apply KVL and KCL to that circuit to find voltages and currents by hand.
- 2) Set up the circuit that shown in Figure 1 by using resistor values below using same resistor values.
- 3) Adjust your power supply voltage ( $V_s$ ) to 5 Volts.
- 4) Measure all voltages and currents.
- 5) Record all these values in a tabular form as Table 1.

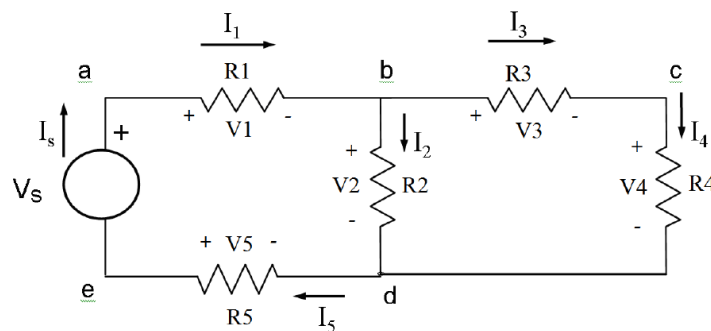


Figure 1

Branch current/voltage	V [volts ]	I [mA]	R [K $\Omega$ ]
V1, I1			
V2, I2			
V3, I3			
V4, I4			
V5, I5			
Vs, Is			

Table 1

**Question:** Compare theoretical and experimental values. Comment these results and comparisons briefly.