BİLKENT UNIVERSITY
ELECTRICAL & ELECTRONICS ENGINEERING DEPARTMENT

EE 201 CIRCUIT THEORY

EXPERIMENT 3

Two Ports

Lab Report

Student Name:

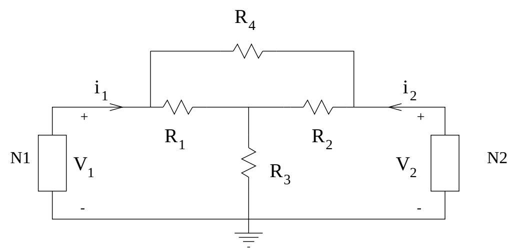
ID Number:

Section :

Date:

Preliminary Work

(1) Consider the following two-port.



Here, resistances should be chosen between 100Ω, 120Ω, 180Ω, 220Ω, 270Ω, 330Ω, 390Ω, 470Ω, 560Ω, 680Ω, 820Ω and 1KΩ. Choose the resistances arbitrarily from these values and find the current-controlled (i.e. resistance), and hybrid-1 representations. Here, N_1 and N_2 represent arbitrary circuits.

(2) Consider the circuit in the previous problem.
i : For N_1, use an E V. DC voltage source (i.e. $v_1 = E$), and for N_2 use an open-circuit (i.e. $i_2 = 0$). Find v_2 in terms of resistance parameters found in part 1 and E.
ii : For N_1, use a R Ω resistor (choose the resistance value in the range indicated in the previous problem), and for N_2, choose an E V. DC voltage source, (i.e. $v_2 = E$). Find v_1 in terms of hybrid parameters found in part 1, E and R.

EXPERIMENT:

Part 1: Construct the two-port shown in problem 1 with the chosen resistances. Using the appropriate measurements, find the two-port parameters required in problem 1 (Here you should do appropriate measurements for each representation). Make comments if there are differences between computed and measured values.

Observation and comments:

Part 2: i : Construct the circuit given in Prob. 2 (i). Measure v_2. Make comments if there are differences between computed and measured values.
Observation and comments:

ii : Construct the circuit given in Prob. 2 (ii). Measure v_1. Make comments if there are differences between computed and measured values.
Observation and comments: