EXPERIMENT 4:
NODAL ANALYSIS

The purpose of this experiment is to solve a circuit using nodal network analysis.

PRELAB
Use nodal voltage analysis to set up the system of equations to solve the problem in Fig.1.

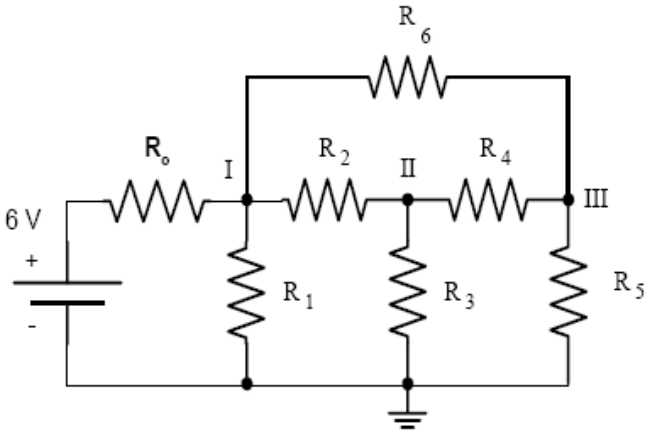

Fig. 1. The circuit for the nodal analysis.

Use the following resistors:
R_0=560Ω, R_1=1kΩ, R_2=6.8kΩ,R_3=3.3kΩ,R_4=4.7kΩ,R_5=1.8kΩ,R_6=10kΩ.

INSTRUMENTATION: Agilent E3631A triple output DC Power supply, Agilent 34405A Digital multimeter.

PROCEDURE
A Verification of the nodal equations.
Construct the circuit of Figure 1 using a breadboard, with the resistors values as indicated in the circuit. Set the power supply to 6 V and measure the nodal voltages respect to ground.

REPORT:

A. Theoretical Development.
1. Solve the equations using MATLAB.

B. Verification of Nodal Equations.
2. Compare the measured values of the nodal voltages with the values from MATLAB
3. Write the nodal equations and verify the KCL at each node using the measurements.