**Note:** Students are required to copy the program-files in this MS-Word document along with results in the same document.

**EXPERIMENT 2 Array (Vector) and Matrix operations**

**DATE:**

(i) Write Scilab/MATLAB script file for finding the sum of a geometric series 1+r+r2+r3+………..+rn= (1-rN)/(1-r); N=number of terms in a series. Accept the value of r and n as input from keyboard. Verify the above equation.

(ii) Write Scilab/MATLAB script file for following tasks:

Accept a square matrix A of any size from keyboard. Find:

* 1. Size of A matrix
  2. Determinant of A matrix
  3. Display whether matrix A is singular or not
  4. Transpose of A matrix
  5. Perform A+A’,A-A’
  6. Find inverse of A matrix
  7. Perform A\*A’ and A.\*A’
  8. Find square of A matrix
  9. Find rank of A matrix
  10. Find eigenvalues and eigenvectors of A matrix

(iii) Create a vector and a matrix with the following commands: v=0:0.2:12 and M=[sin(v); cos(v)]. Find the sizes of v and M and extract the first 10 elements of each row of the matrix and display them as column vectors.

**EXPERIMENT 3 Solution of Simultaneous Linear Equations and 2D Graphics**

**DATE:**

(i) Write a Scilab/MATLAB program to obtain solution of systems of *n* linear equations. Apply your program to the following electrical network to obtain loop currents and node voltages mentioned. Use the matrix left division operator ‘\’.



(ii) The polar equation of a circle is given by: x=r cosθ, y=r sinθ. Take θ= 0 to 2π with step size of π/16 and write a program to plot the circle on x-y axis for given value of radius r. Give labels to axis and title to the figure. Make use of new figure and redraw the circle with distinct points shown by ‘o’ rather than a continuous plot. Now combine the two plots in new figure to show the line through the data points as well as the distinct data points.