

# Device Simulation Laboratory

(EE5195)

## Problem Sheet-I

1. Create a 10x1 vector with a linear spacing of 2.

(a) Find the sum of all the numbers of the input vector.

(b) Arrange the vector in descending order.

2. Take a matrix of size 5x5.

A=

(a) Extract the matrix B = using a single line command.

(b) Extract the diagonal matrix of A and also find determinant of A.

(c) Create a random matrix C of size 5x5 and do the matrix multiplication and element wise multiplication. Are both the results same?

3. Write a MATLAB code to find the value of y where  $y=1$  if  $x>\pi/2$ ,  $y=\sin(x)$  if  $0<x<\pi/2$ ,  $y=0$  otherwise. Try the code using if-elseif statements and switch statement. Plot y as a function of x and extract the value of y in the range  $-\pi/4$  to  $\pi/4$ .

4. Write a MATLAB program that generates a vector for a given value of n like this (sugg: use for loop)

Input: If  $n=3$

Output: vect= [1 2 2 3 3 3]

Input: If  $n=4$

Output: vect= [1 2 2 3 3 3 4 4 4 4]

5. Plot the following functions:  $t=0:10$ ; Take your own spacing

$x(t)=$      $y(t)=$

(a) Plot both the functions in a single plot

(b) Limit the axis to x-axis limit: 0:5, y-axis limit: -50:50

(c) Set the grid on, linewidth to 5, show the marker indices at the interval of 2, give a marker circle of size 5 with edge having a colour and filled area having another colour. Keep the legend, xlabel and ylabel properly.