**Department of Electronics and Communication Central University of Rajasthan, Ajmer**



Signal and System Lab

Subject ...................................................................................................

ECE 214

Subject Code ...................................................................................................

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Experiment No. .......................................................................................

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**Title: -** Introduction to MATLAB(part1).

**Apparatus required:** - Downloaded MATLAB or OCTAVE software in device.

**Introduction:**- A MATLAB is an advanced software that can help in performing various tasks very easily and conveniently as compared from other programming languages. The interface of MATLAB is easy to understand and easily learnable. It can help in various domains like; image processing, communication, signal tracing, to process large amounts of data, etc., the interface of MATLAB is divided into three parts which are as follows; 1. Command window 2. Workspace 3. Command history.

* **Command window** interface is used to write all the commands which is useful to write all the commands which are used in the experiment.
* **Workspace** interface represents all the variables that represent all the variables which are used in the experiment.
* **Command history** interface is used to show all the history from the beginning when the user has started using the MATLAB programming.
* **Current folder** interface is used to show all the saved folders in the MATLAB.

**Advantages of MATLAB:-**

* Platform independent
* Easy to use
* Language friendly
* Predefined functions

**Disadvantages of MATLAB:-**

* Very costly
* Execution speed is less

**Theory:-** Using MATLAB we can perform various basic and advance operations like; addition, subtraction, multiplication, division, floor, ceil, we can also plot various graphs according to our experiment requirements. There are various commands that we can use to make a MATLAB program and do various operations which are as follows.

* **Operational commands:-** 
  + - **+**  :- to add two variables
    - **-** :- to subtract two variables
    - **\***  :- to multiply two variables
    - **/**  :- to divide two variables
    - **sqrt** :- to take a square root of variable
    - **^**  :- to perform power operations
    - **Round(f)** :- to take a roundoff of a floating variable
    - **ceil(f)** :- to take a ceiling no of floating variable
    - **floor(x)** :- to take a flooring no of floating variable
    - **real(x)** :- to take a real part of complex number
    - **imag(x)** :- to take a imaginary part of complex number
    - **abs(x)** :- to find the absolute value of complex number
    - **conj( x)** :- to find the conjugate value of complex number x
    - **angle**(x) :- to find the argument of complex number x
    - **rem(a,b)** :- to find the remainder of the division a/b
* **Interface commands:-**
  + - **clc** :- to clear the command from the command window
    - **clear all** :- to clear all the variables from the workspace
    - **save name** :- to save the file of the given name and use in further future
    - **help operation** :- to give help with various operations if we got stuck
    - **load name** :- to open the save file of given name
    - **lookfor name** :- to find the command of given name
    - **diary name** :- to make a diary of given commands
    - **doc (name of function)** :- it gives the description to function in various ways.
    - **plot(var a,var b)**:- it gives the plot between a and b
    - **clf** :- it is used to clear the above plot.
    - **Ctrl c** :- used to close the infinite loop.
    - **who** :- used to show variables used
    - **whos** :- provide variables with details
    - **.+, .\*, ./,etc.** :- used to perform element wise arithmetic operation in array
    - **x= a:b:c** :- is used for automated data entry starting from a and ending with c with the gap of b.
    - **hold on :-** is used to hold the above graph
    - **grid on :-** is used to show grids on the plot
    - **xlable(“ ”) :**- is used to give x lable to the plot
    - **ylable(“ ”) :**- is used to give y lable to the plot
    - **input(“abc”) :**- is used to take an input from user by printing abc prompt
    - **disp( ) :**- is used to display an output or any text written in between the braces.
    - **endif :**- is used to end the if statement

We have observed many commands and other then these commands some other commands are like

* + - NaN :- represents that the number is not a number
    - Inf :- represents that the number is infinity
    - pi :- used to represent letter π.
    - A[var1,var2,…,varn] :- used to represent an array.

**Result:-** We have observed various commands and learned the basics of MATLAB programming.