Course Code: 16EC443 **R16**

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SIDDHARTH GROUP OF INSTITUTIONS :: PUTTUR
Siddharth Nagar, Narayanavanam Road – 517583

QUESTION BANK (DESCRIPTIVE)

Subject with Code : MATLAB PROGRAMMING (16EC443)(OE) Course & Branch:B.Tech – CIVIL, MEC, EEE,CSE

Year & Sem: IV-B.Tech & I-Sem **Regulation:** R16

UNIT –I
INTRODUCTION TO MATLAB

1	a)List a brief note on Menus and Tool bars available in MATLAB.	[L1][CO1]	[6M]
	b)Use MATLAB to solve the following set of equations. 6x - 4y + 8z = 112 -5x - 3y + 7z = 75 -5x - 3y + 7z = 75	[L3][CO1]	[6M]
2	a)Explain how to solve linear algebraic equations by using MATLAB, give one b)example.	[L2][CO1]	[6M]
	Explain input and output commands used in MATLAB.	[L2][CO1]	[6M]
3	Explain the significance of script files and editor debuggers in matlab program**.**	[L2][CO1]	[12M]
4	Describe various options available in the menus and toolbars in matlab software.	[L2][CO1]	[12M]
5	a)Write brief note on MATLAB help system.	[L1][CO1]	[6M]
	b)Use the MATLAB Help facilities to find information about the following topics and symbols: plot, label	[L3][CO1]	[6M]
6	Explain about polynomial operations using arrays with examples.	[L2][CO1]	[6M]
	Write MATLAB commands to Plot the polynomial $y=x^3+13x^2+52x+3$ over the range $-7 \le x \le 1$.	[L1][CO1]	[6M]
7	a)Write brief note on MATLAB plotting commands.	[L1][CO1]	[6M]
	b)how to Plot the functions $y = 2\sqrt{x}$ and z = 4 sin3x for $0 \le x \le 5$ on the same plot by using MATLAB	[L4][CO1]	[6M]
8	Explain about MATLAB basic syntax and matlab help system	[L2][CO1]	[12M]
9	a)Discuss about script file and function file in writing matlab program with examples.	[L2][CO1]	[6M]
	b)Explain about Commands for managing the work sessions.	[L2][CO1]	[6M]
10	a)List the MENUS available in the MATLAB	[L1][CO1]	[6M]
	b)The matrix $\mathbf{B} = \begin{bmatrix} 2 & 4 & 10 & 13 \\ 16 & 3 & 7 & 18 \\ 8 & 4 & 9 & 25 \\ 3 & 12 & 15 & 17 \end{bmatrix}$ By using MATLAB find C = B (2:3,1:3)	[L3][CO1]	[6M]

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UNIT –II
ARRAYS

1	a)What is an array? Write short note on one dimensional and two-dimensional array and give one examples	[L1][CO2]	[6M]
	b)Explain how Array addressing is done in MATLAB, give some examples.	[L2][CO2]	[6M]
2	a)Write brief description about multidimensional array with some examples.	[L1][CO2]	[6M]
	b) i) Use two methods to create the vector x having 100 regularly spaced values starting at 5 and ending at 28. ii) Use two methods to create the vector x having a regular spacing of 0.2 starting at 2 and ending at 14.	[L3][CO2]	[6M]
3	Write Element-by-Element operation on (i) Array Addition and Subtraction (ii) Element-by-Element Multiplication (iii) Element-by-Element Division (iv) Element-by-Element Exponentiation	[L1][CO2]	[12M]
4	Given the matrices $A=\begin{bmatrix} 21 & 27 \\ -18 & 8 \end{bmatrix}$ $B=\begin{bmatrix} -7 & -3 \\ 9 & 4 \end{bmatrix}$ Find (i) their array product, (ii) their array right division (A divided by B), and (iii) 'B'raised to the third power element by element.	[L3][CO2]	[12M]
5	The current I passing through an electrical resistor having a voltage v across it is given by Ohm's law,I=v/R, where R is the resistance. The power dissipated in the resistor is given by V^2 /R. The following table gives data for the resistance and voltage for five resistors Use the data to compute (a) the current in each resistor and (b) the power dissipated in each resistor. 1 2 3 4 5 R (Ω) 10^4 2×10^4 3.5×10^4 10^5 2×10^5 v (V) 120 80 110 200 350	[L3][CO2]	[12M]
6	a)Use MATLAB to conform that $(20x^3-7x^2+5x+10)(4x^2+12x-3)=(80x^5+212x^4-124x^3+121x^2+105x-30)$	[L3][CO2]	[6M]
	b)Use MATLAB to conform that $\frac{12x^3+5x^2-2x+3}{3x^2-7x+4}=4x+11$	[L3][CO2]	[6M]
7	a)Explain about polynomial operations using arrays with examples.	[L2][CO2]	[6M]
	b)Plot the polynomial $y=x^3+13x^2+52x+3$ over the range $-7\le x\le 1$.	[L3][CO2]	[6M]
8	Explain about concept of cell array, and create a 2 × 2 cell array A, whose cells contain the location, the date, the air temperature (measured at 8 A.M., 12 noon, and 5 P.M.), and the water temperatures measured at the same time in three different points in a pond. The cell array looks like the following.	[L3][CO2]	[6M]

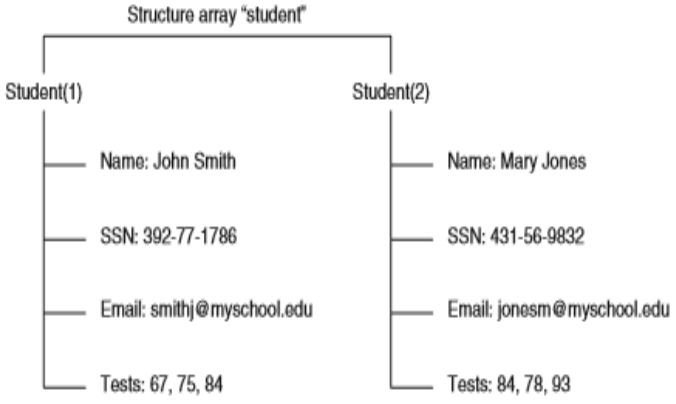
Walden Pond	June 13, 1997
[60 72 65]	$\begin{bmatrix} 55 & 57 & 56 \\ 54 & 56 & 55 \\ 52 & 55 & 53 \end{bmatrix}$

	The following table gives data for the distance traveled along five truck routes and the corresponding time required to traverse each route. Use the data to compute the average speed required to drive each route. Find the route that has the highest average speed. [L3][CO2][5M]	[L3][CO2]	[6M]

	1	2	3	4	5
Distance (mi)	560	440	490	530	370
Time (hr)	10.3	8.2	9.1	10.1	7.5

9	a)The current I passing through an electrical resistor having a voltage V across it is given by Ohm's law, I=V/R, where R is the resistance. The power dissipated in the resistor is given by V^2/R The following table gives data for the resistance and voltage for five resistors. Use the data to compute (a) the current in each resistor and (b) the power dissipated in each resistor.	[L3][CO2]	[6M]

	1	2	3	4	5
$R\ (\Omega)$	10^4	2×10^4	3.5×10^4	10^5	2×10^5
v (V)	120	80	110	200	350

	b)The maximum height h achieved by an object thrown with a speed at an angle '$\boldsymbol{\theta}$' to the horizontal, neglecting drag, is $$h = \frac{v^2 \sin^2\theta}{2g}$$ V = 10, 12, 14, 16, 18, 20 m/s $\boldsymbol{\theta}$= 50°, 60°, 70°, 80°. The rows in the table should correspond to the speed values, and the columns should correspond to the angles.	[L3][CO2]	[6M]
10	Create a structure array to contain the following types of student data: ■ Student name. ■ Social Security number. ■ Email address. ■ Test scores Enter the data shown in Figure below into the database. 	[L3][CO2]	[12M]

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UNIT –III
FUNCTIONS AND FILES

1	Describe briefly about the additional functions available in MATLAB programming.	[L2][CO3]	[12M]
2	Explain about elementary mathematical functions with proper commands.	[L2][CO3]	[12M]
3	Describe about control-flow structures frequently used in MATLAB programming.	[L2][CO3]	[12M]
4	a)Write detail about working with data files.	[L1][CO3]	[6M]
	b)Explain briefly about Logarithmic Functions	[L2][CO3]	[6M]
5	a)Explain briefly about methods for calling functions**.**	[L2][CO3]	[6M]
	b)Explain briefly about Matlab Trigonometric and Hyperbolic Function	[L2][CO3]	[6M]
6	Explain about Minimizing a Function of Several Variable.	[L2][CO3]	[12M]
7	Write brief note about User defined functions in MATLAB.	[L1][CO3]	[12M]
8	Write short note on Minimizing a Function of One Variable.	[L1][CO3]	[12M]
9	a)Write about Finding the Zeros of a Function.	[L1][CO3]	[6M]
	b)List some commonly used mathematical functions.	[L1][CO3]	[6M]
10	a)For several values of x, use MATLAB to conform that $\sinh x=(e^{x}-e^{-x})/2$	[L3][CO3]	[6M]
	b)Explain about Exponential and Logarithmic functions.	[L2][CO3]	[6M]

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UNIT –IV
PROGRAMMING WITH MATLAB

1	Write about Algorithms and control structures.	[L1][CO4]	[12M]
2	Compute the perimeter p and the area A of a triangle whose sides are a, b, and c. The formulas are p = a + b + c s =p/2 A=sqrt((s(s-a)(s-b)(s-c).)	[L3][CO4]	[12M]
3	Explain about Relational Operators and Logical Variable.	[L2][CO4]	[12M]
4	Explain about Logical Operators and Function.	[L2][CO4]	[12M]
5	if x = [5,-3,18,4] and y = [-9,13,7,4], what will be the result of the following operations? Use MATLAB to check your answer. a. z = ~y > x b. z = x & y c. z = x | y	[L3][CO4]	[12M]
6	Explain about conditional statements.	[L2][CO4]	[12M]
7	Explain about Program Design and Develpoment in MATLAB	[L2][CO4]	[12M]
8	Suppose that x = [-9, -6,0, 2,5] and y = [-10, -6, 2, 4, 6]. What is the result of the following operations? Determine the answers by hand, and then use MATLAB to check your answers. a. z = (x < y) b. z = (x > y) c. z = (x ~= y) d. z = (x == y) e. z = (x > 2)	[L3][CO4]	[12M]
9	Write bout Structured programming	[L1][CO4]	[12M]
10	Explain about for Loop and While loop.	[L2][CO4]	[12M]

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UNIT –V
ADVANCED PLOTTING

1	Explain about XY plotting Functions.	[L2][CO5]	[12M]
2	Write short note on a)subplots b)overlay plots c)Three dimentional plots.	[L3][CO5]	[12M]
3	Explain about grid and axis commands in MATLAB	[L2][CO5]	[12M]
4	Explain about Additional commands and Plot types in MATLAB	[L2][CO5]	[12M]
5	Explain about Interactive Plotting in MATLAB	[L2][CO5]	[12M]
6	Write brief short note on Three dimentional plots in MATLAB	[L1][CO5]	[12M]
7	Create a surface plot and a contour plot of the function $z = xe^{-[(x-y2)2}+y^2$ by using MATLAB	[L3][CO5]	[12M]
8	Discuss about Three Dimensional surface mesh plots and contour plots.	[L3][CO5]	[12M]
9	Write MATLAB code for (a) mesh plot (b) meshc plot (c) meshz plot (d) waterfall plot	[L3][CO5]	[12M]
10	Discuss about Data Markers and Line Types in MATLAB	[L2][CO5]	[12M]

Prepared by:
Mr A. RAJASEKHAR YADAV
Associate Professor/ECE