Model Question Paper-I with effect from 2023-24 (CBCS Scheme)

USN | | | | | | | | | | |

Third Semester B.E. Degree Examination
MATLAB Programming

TIME: 02 Hours **Max. Marks: 50**

Note: 01. Answer any **FIVE** full questions, choosing at least **ONE** question from each **MODULE**.

Q.No	Question	M	L	CO
	MODULE-1			
1	a. Explain the features and capabilities of MATLAB	**5**	**L2**	**CO1**
	b. Write a MATLAB commands for following expressions i) $\frac{2^5}{2^5-1}$ iii) area $=\pi r^2$, $r=\pi^{1/3}-1$ ii) $3\frac{\sqrt{5}-1}{(\sqrt{5}+1)^2}$ iv) $e^{\pi\sqrt{163}}$ v) $y=\cosh^2 x-\sinh^2 x$ with $x=32\pi$	**5**	**L2**	**CO1**
	OR			
2	a. Demonstrate array operations in MATLAB with suitable examples	**5**	**L2**	**CO1**
	b. Write a MATLAB commands for following expressions i) $\frac{1+3i}{1-3i}$ iv) $z=\frac{\sin(t^2)}{t^2}$ ii) $e^{i\pi/4}$ v) $y=\frac{t-1}{t+1}$, where t is a vector iii) $x=t\sin(t)$ where t is a vector	**5**	**L2**	**CO1**
	MODULE-2			
3	a. Write a MATLAB program to plot a circle of unit radius with comments	**5**	**L2**	**CO2**
	b. With respect to the MATLAB script files explain the commands **i.** to see the variables present in your workspace **ii.** to get more information about the variables and the workspace **iii.** to see the contents of an M-file without opening the file with an editor **iv.** to look for M-files with keywords in their description **v.** to ask the user to input on the screen	**5**	**L2**	**CO2**
	OR			
4	a. Write a MATLAB commands to Plot y = sin x, $0 \le x \le 2\pi$, taking 100 linearly spaced points in the given interval. Label the axes and put 'Plot created by your name' in the title	**5**	**L2**	**CO2**
	b. Write a MATLAB function to compute the factorial n! for any integer n. The	**5**	**L2**	**CO2**

	input should be the number n and the output should be n!.			
	MODULE-3			
5	a. What are anonymous functions? Explain with example	**5**	**L2**	**CO3**
	b. Create three anonymous functions corresponding to the following expression $f(x) = x^4 - 8x^3 + 17x^2 - 4x - 20$ $g(x) = x^2 - 4x + 4$ $h(x) = x^2 - 4x - 5.$	**5**	**L2**	**CO3**
	OR			
6	a. Explain MATLAB commands to import and export data with suitable example	**5**	**L2**	**CO3**
	b. Define the following function symbolically $f(x) = (x^2 - 4x)(x^2 - 4x + 1) - 20$. i. Write the command for Expand f(x) ii. Write command to Factorize f using the symbolic function iii. Write command to Solve the following nonlinear algebraic equations simultaneously. $x + 3y - z = 2$ $x - y + z = 3$ $3x - 5y = 4.$	**5**	**L2**	**CO3**
	MODULE-4			
7	a. Write a MATLAB command to i. Create a nxn matrix ii. creates an n by n identity matrix. iii. creates an n by n zero matrix. iv. creates an n by n unit matrix. v. to pulls out the diagonal elements	**5**	**L2**	**CO4**
	b. Write the output of the following MATLAB commands i. a = 0:10:100 ii. b = 0:pi/50:2*pi iii. >> d = [2 4 6 8]; >> d1 = [-3 -3 -3]; >> d2 = [-1 -1]; >> D = diag(d) + diag(d1,1) + diag(d2,-2) **iv.** B = [ones(3) zeros(3,2); zeros(2,3) 4*eye(2)]	**5**	**L2**	**CO4**
	OR			
8	a. Explain the following MATLAB commands with suitable examples. i. Plot ii. ezplot iii. fplot iv. ezpolar v. ezplot3	**5**	**L2**	**CO4**
	b. Explain relational operators in MATLAB with suitable examples.	**5**	**L2**	**CO4**
	MODULE-5			

9	**a.** Describe the anatomy of function file in MATLAB and explain	**5**	**L2**	**CO5**
	b. Write a script file named sineseries.m that computes the value of sin(x) at a given x using n terms of the series expansion of sine function $$\sin(x) = x - \frac{x^3}{3!} + \frac{x^5}{5!} - \cdots = \sum_{k=1}^{n} (-1)^{k-1} \frac{x^{2k-1}}{(2k-1)!}$$	**5**	**L2**	**CO5**
	OR			
10	**a.** Explain MATLAB control flow statements like for-loops, while loops and, of course, if-elseif-else branching with suitable examples	**5**	**L2**	**CO5**
	b. Write a short note on MATLAB Profiller.	**5**	**L2**	**CO5**

BEC358B

Model Question Paper-II with effect from 2023-24 (CBCS Scheme)

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Third Semester B.E. Degree Examination

MATLAB PROGRAMMING

TIME: 02 Hours **Max. Marks: 50**

Note: Answer any **FIVE** full questions, choosing at least **ONE** question from each **MODULE**.

		Module -1	*Bloom's Taxonomy Level	Marks
Q.01	a	With neat diagram explain MATLAB	L2	**5**
	b	Write a MATLAB program to compute Area = πr^2 with r = $\pi^{1/3}$ - 1. (πIs pi in MATLAB)	L3	**5**
		OR		
Q.02	a	Write a MATLAB program for the equation of a straight line is y = mx + c, where m and c are constants. Compute the y-coordinates of a line with slope m = 0.5 and the intercept c = -2 at the following x-coordinates: x = 0, 1.5, 3, 4, 5 , 7, 9, and 10	L3	**5**
	b	Explain various file types used in MATLAB	L2	**5**
		Module-2		
Q. 03	a	Write a MATLAB programPlot y = sin x, 0< x <2 π, taking 100 linearly spaced points in the given interval. Label the axes and put "Plot created by yourname" in the title.	L3	**5**
	b	Explain the steps involved in creating and executing a function file.	L2	**5**
		OR		
Q.04	a	Write a MATLAB code to create a 4*4 matrix	L3	**5**
	b	Explain the steps involved in creating and executing a script file.	L2	**5**
		Module-3		
Q. 05	a	Write a MATLAB code to compute the following expression f(x)=$x^4 - 8x^3 + 17x^2 - 4x - 20$	L3	**5**
	b	Explain how to use publisher from the editor window with example	L2	**5**
		OR		
Q. 06	a	Write a MATLAB code to Solve the following set of simultaneous linear algebraic equations. x+ 3y –z=2 x-y+z=3 3x - 5y =4.	L3	**5**
	b	Explain three different kinds of files for reading data into MATLAB's workspace	L2	**5**
		Module-4		
Q. 07	a	How to name variables, what is the precision of computation and how to recall previously typed commands?	L3	**5**
	b	With example explain input in matrices and vectors?	L2	**5**
		OR		
Q. 08	a	Explain the steps in creating vector.	L3	**5**
	b	Explain built-in functions of MATLAB.	L2	**5**
		Module-5		
Q. 09	a	Explain script files with example.	L3	**5**
	b	Explain function files with example	L2	**5**
		OR		
Q. 10	a	Explain 2 ways for executing a function.	L3	**5**
	b	Explain the Recursion in MATLAB.	L2	**5**