

Reg. No.																			
----------	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Question Paper Code	12145
---------------------	-------

B.E. / B.Tech. - DEGREE EXAMINATIONS, NOV / DEC 2023

Seventh Semester

Computer Science and Business Systems

20CBPW702 – IT WORKSHOP SKY LAB / MATLAB

(Regulations 2020)

Duration: 3 Hours

Max. Marks: 100

PART - A (10 × 2 = 20 Marks)

Answer ALL Questions

- | | <i>Marks,
K-Level, CO</i> |
|--|-------------------------------|
| 1. Given the code snippet <code>x = 1; y = 2; z = x + y; disp(x);</code> , if you want to display the value of z instead of x, what corrections should you make? | 2,K2,CO1 |
| 2. State the differences between the clear and clc commands in MATLAB. | 2,K2,CO1 |
| 3. Write a MATLAB code to extract the elements in the first column and the third row of matrix A. | 2,K2,CO2 |
| 4. Write a MATLAB code to generate a 3x3 matrix containing only 1's. | 2,K2,CO2 |
| 5. What command is used to create a 2D plot in MATLAB? | 2,K2,CO3 |
| 6. Write the steps to change the color of a line plot in MATLAB. | 2,K1,CO3 |
| 7. Write a MATLAB script that prompts the user to enter their name and then displays a greeting message with the entered name. | 2,K2,CO4 |
| 8. Write a script that takes two numbers as input from the user and displays their sum and product? | 2,K2,CO4 |
| 9. What are the main features of the MATLAB debugger? | 2,K1,CO5 |
| 10. State the procedure to set up a watch list for monitoring specific variables during debugging. | 2,K1,CO5 |

PART - B (5 × 13 = 65 Marks)

Answer ALL Questions

- | | |
|--|----------|
| 11. a) (i) Discuss about the error functions in MATLAB. Write the code to generate a custom error message in MATLAB. | 7,K2,CO1 |
| (ii) Explain MATLAB Profiler in detail. How can it help in identifying performance bottlenecks in code. | 6,K2,CO1 |

OR

- | | |
|--|-----------|
| b) Discuss the basic features of Matlab and explain the strength and weakness of Matlab. | 13,K2,CO1 |
| 12. a) (i) Given two matrices A and B:
A = [3 1; 2 4];
B = [5 2; 0 6]; | 7,K2,CO2 |

Write the MATLAB code to calculate C ,the addition of A and B and display ‘C’.

(ii) Write a MATLAB script that multiplies two matrices A (3x2) and B(2x4) and stores the result in matrix C. Display the contents of matrix C. 6,K2,CO2

OR

b) Write a MATLAB code to solve the following Linear Equations for unknown values x,y and z. 13,K2,CO2

$$x+y+z=11$$

$$2x-6y-z=0$$

$$3x+4y+2z=0.$$

13. a) Plot a basic sine wave graph in MATLAB, and specify the label to both x & y axis in the font size of 12 and specify the title in the font size of 14. 13,K2,CO3

OR

b) (i) Write MATLAB commands to create two different wave forms sine & cosine in single Graph, mention different colours, line styles and markers to show the difference. 7,K2,CO3

(ii) Write a MATLAB code to plot $y=\exp(-0.4x)\sin(x)$ for x lying between 0 to 4π taking 10, 50 and 100 points interval. 6,K2,CO3

Hint (Use function **linspace** to change the intervals of x)

14. a) (i) Explain how to plot histogram of 100 randomly distributed numbers between 0 to 1. 7,K2,CO4

(ii) Explain how to Plot 3-D Contour lines for the function $z=-5/(1+x^2+y^2)$ for $|x|\leq 3$ and $|y|\leq 3$. 6,K2,CO4

OR

b) Explain with example, how dlmread command is used to read input data from a text file in matlab. 13,K2,CO4

15. a) (i) Explain the importance of catching and handling errors gracefully in MATLAB M-files. 7,K2,CO5

(ii) Discuss some best practices for efficient debugging in MATLAB. 6,K2,CO5

OR

b) Write a MATLAB program for a matchstick game being played between the computer and a user. Your program should ensure that the computer always wins. Rules for the game are as follows: 13,K2,CO5

– There are 21 matchsticks.

– The computer asks the player to pick 1, 2, 3, or 4 matchsticks.

– After the person picks, the computer does its picking.

– Whoever is forced to pick up the last matchstick loses the game.

PART - C (1 × 15 = 15 Marks)

16. a) (i) Write a script file which will a)take the temp of a city in degree Celsius will calculate in degree Fahrenheit for 10 days b)prepare the data in tabular form and will c)write the data to .doc file by using fprintf command. 8,K3,CO4

(ii) Explain the purpose of breakpoints in MATLAB. 7,K2,CO5

OR

b) (i) Take the temp of a city in degree Celsius will calculate in degree Fahrenheit for 10 days, write it to .xlsx file at new sheet location with sheet name as 'temp_conv' and from location column D4. Also write Variable Celsius and Fahrenheit at location D3 and Temperature Conversion Table at location D2. 8,K3,CO4

(ii) Explain in detail about the common error types encountered in MATLAB M-files. 7,K2,CO5