B.E. / B.Tech. - DEGREE EXAMINATIONS, NOV / DEC 2024

Seventh Semester

Computer Science and Business Systems

20CBPW702 - IT WORKSHOP SKY LAB / MAT LAB

Regulations - 2020

Duration: 3 Hours   Max. Marks: 100

PART - A (MCQ) (20 × 1 = 20 Marks)
Answer ALL Questions

		Marks	K–Level	CO
1.	Which command clears all data and variables stored in memory?	1	K1	CO1
	(a) clc (b) clear (c) delete (d) deallocate			
2.	Which of these is not an aspect of a for/while loop?	1	K1	CO1
	(a) update (b) initialization (c) runner (d) condition			
3.	Which of the following will correctly define x, y, and z as symbols?	1	K1	CO1
	(a) sym (x, y, z) (b) syms x y z (c) syms x, y, z (d) sym x, y, z			
4.	The-----------MATLAB command is to add a comment to the mfile,	1	K1	CO1
	(a) % (b) ; (c) comment(' ') (d) &			
5.	What is the key used to stop the execution?	1	K1	CO2
	(a) ctrl+c (b) ctrl+b (c) ctrl+enter (d) ctrl+ s			
6.	When you multiply a vector by a number, this is called the _____.	1	K1	CO2
	(a) value multiplication (b) variable multiplication			
	(c) vector multiplication (d) scalar multiplication			
7.	To refer all the elements in the mth column of A, we need to type _____.	1	K1	CO2
	(a) (;,:) (b) A (;,m) (c) A(m,;) (d) A(:,m)			
8.	What function will be returned as a symbolic matrix?	1	K1	CO2
	(a) F - Resulting matrix (b) f – Function (c) A - Output matrix (d) A - Input matrix			
9.	What happens if we don't stop the implementation of the hold function?	1	K1	CO3
	(a) Nothing happens			
	(b) MATLAB keeps on generating multiple plots in the same window			
	(c) Error is generated			
	(d) Plot function won't work			
10.	The function to plot vector field is _____	1	K1	CO3
	(a) quiver() (b) pie3 (c) ezplot() (d) contour()			
11.	What is the difference between hold on and hold all?	1	K1	CO3
	(a) no difference			
	(b) hold all holds every plot while hold on holds a specific plot in the chain of argument			
	(c) hold all does not exist			
	(d) hold on is syntactically incorrect			
12.	Which command is suitable to change the axes of the graph plotted?	1	K1	CO3
	(a) axes (b) axis (c) yxaxes (d) no command			
13.	What is the basic difference between M-files and MAT-files?	1	K1	CO4
	(a) There is no difference			
	(b) MAT files are binary data files while m-files are ASCII text files			
	(c) M files are binary data files while MAT-files are ASCII text files			
	(d) There is no such thing as MAT files			
14.	How do you create a function file in MATLAB?	1	K1	CO4
	(a) Begin m-file with function definition (b) Begin script file with function definition			
	(c) There is no such thing called function file (d) An m-file is only a function file			

K1 – Remember; K2 – Understand; K3 – Apply; K4 – Analyze; K5 – Evaluate; K6 – Create

15. A student has created a plot of $y(t)=t^2$. He is need to show another graph of $z(t)=t^3$ in the same plot. But every time he hits the plot() function- MATLAB generates a plot of z(t) vs t but on a different window. What is the error?   *1 K1 CO4*
    (a) It is not possible to plot multiple plots
    (b) He is not using the line function
    (c) Maybe he is using stem() instead of plot()
    (d) He is not using the hold function
16. How to introduce a title to describe the subplots generated in MATLAB?   *1 K1 CO4*
    (a) Use a function (b) Use the title function (c) Use the legend function (d) Use uipanel()
17. To end the debugging mode, we use the _____   *1 K1 CO5*
    (a) dbquit   (b) dbend   (c) debugend   (d) No such function
18. What is dbstop command?   *1 K1 CO5*
    (a) exits from the debugging mode
    (b) pauses for the debugging mode when a condition is reached only
    (c) exits the debugging mode at any point in the function
    (d) does not exist
19. The dbquit command, if placed in an m.file, will _____   *1 K1 CO5*
    (a) never run the debugging mode
    (b) exit from the debugging mode
    (c) result in an error while running the function
    (d) dbquit does not exist
20. We use the run > outfile command to: *1 K1 CO5*
    (a) edit an outfile file   (b) enter an outfile file
    (c) jump to an outfile file   (d) direct the output to the outfile file

PART - B (10 × 2 = 20 Marks)
Answer ALL Questions

#	Question	Marks	K	CO
21.	What MATLAB command is used to clear the workspace?	2	K1	CO1
22.	Compare and Contrast fixed-point notation and scientific notation in the context of displaying floating-point numbers in MATLAB.	2	K2	CO1
23.	What is the syntax for extracting sub matrix?	2	K1	CO2
24.	What is the syntax of the find function to find the zero element of an array with an example?	2	K1	CO2
25.	How can you change the color of a plot line in MATLAB?	2	K1	CO3
26.	Show the purpose of the legend function in MATLAB when creating a plot.	2	K1	CO3
27.	What function is commonly used to display output in a MATLAB script?	2	K1	CO4
28.	Show a script that takes two numbers as input from the user and calculates their sum and product.	2	K1	CO4
29.	How can you set up a watch list for monitoring specific variables during debugging?	2	K1	CO5
30.	What are two strategies faced with a bug in MATLAB code?	2	K1	CO5

PART - C (6 × 10 = 60 Marks)
Answer ALL Questions

31. a) Interpret a MATLAB function called calculate Circle Area that takes the radius as an input parameter and calculates the area of a circle. Define a local variable pi inside the function with the value 3.14   *10 K2 CO1*

OR

b) Demonstrate a MATLAB program that classifies a triangle based on its sides' lengths. The program should prompt the user to enter the lengths of three sides. Using relational expressions and logical operators, classify the triangle as equilateral, isosceles, or scalene.   *10 K2 CO1*

K1 – Remember; K2 – Understand; K3 – Apply; K4 – Analyze; K5 – Evaluate; K6 – Create   **13214**

32. a) Given a matrix A (5x3) and a matrix B (3x2), construct MATLAB code to calculate the product C. Check if the dimensions are compatible before performing the multiplication. 10 K3 CO2

OR

b) Construct a MATLAB function that generates a Toeplitz matrix T (n x n) based on a given vector of the first row/column. Test it with a vector [1, 2, 3, 4] and display the resulting T matrix. 10 K3 CO2

33. a) Apply 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. 10 K3 CO3

OR

b) Make use of a MATLAB code to plot the following signals in continuous form 1) Sine wave 2) Cosine wave 3) square wave 4) Positive and Negative exponential functions. 10 K3 CO3

34. a) A library charges a fine for every book returned late. 10 K3 CO4
For first 5 days the fine is 5 rupees, For 6-10 days fine is 10 rupees and above 10 days fine is 50 rupees. If you return the book after 30 days your membership will be cancelled. Demonstrate a program to accept the Expected Date of Return and Actual Date of Return as yyyy, mm, and dd from the user. Identify the number of days the member is late to return.

OR

b) Develop a menu driven MATLAB program which has following options: 10 K3 CO4
1. Factorial of a number.
2. Prime or not
3. Odd or even
Verify all the possible options by taking number as input from the User.

35. a) Explain the importance of catching and handling errors gracefully in MATLAB M-files. 10 K2 CO5

OR

b) Summarize the best practices for efficient debugging in MATLAB. 10 K2 CO5

36. a) i) Write a script file which will take the min and max temperature of five different locations and for 5 different days from the user and show the bar graph for the same. 5 K2 CO4
ii) Illustrate a User Defined Function which will convert polar values to rectangular values by using following conversion formula. 5 K2 CO5
$x = r \cos(theta)$
$y = r \sin(theta)$

OR

b) i) Riz buys three apples, a dozen bananas, and one cantaloupe for $2.36. Bob buys a dozen apples and two cantaloupe for $5.26. Carol buys two bananas and three cantaloupe for $2.77. How much do single pieces of each fruit cost? Illustrate MAT Lab programs for the same. 5 K2 CO4
ii) How can you set a conditional breakpoint based on a specific expression? And explain the difference between regular breakpoints and conditional breakpoints. 5 K2 CO5