



LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

B.Sc. DEGREE EXAMINATION – MATHEMATICS

FIFTH SEMESTER – NOVEMBER 2023

UMT 5504 – MATHEMATICAL TOOLS FOR ANALYTICS

Date: 10-11-2023

Dept. No.

Max. : 100 Marks

Time: 09:00 AM - 12:00 NOON

SECTION A - K1 (CO1)

Answer ALL the Questions -

(10 x 1 = 10)

1. Answer the following

- a) Define script file.
- b) What is the use of grid command in plotting?
- c) Write a short note on help text lines.
- d) Write the syntax of polyfit command.
- e) Define cell array.

2. Fill in the blanks

- a) The Window opens automatically when graphics commands are executed.
- b)command removes all variables from the memory.
- c) A polynomial can be divided by another polynomial with the MATLAB built in function
- d) Thecommand collects the terms in the expression that have the variable with the same power.
- e) The name of the structure variable is

SECTION A - K2 (CO1)

Answer ALL the Questions

(10 x 1 = 10)

3. Choose the correct answer

- a) The editor window is opened from thein the command window.
(i) File menu (ii) Help menu (iii) View menu (iv) Start menu
- b) The command can also be used to assign a string to a variable.
(i) disp command (ii) Input command (iii) Output command (iv) Set path
- c) The script file is a sequence of MATLAB command also called a
(i) variable (ii) program (iii) array functions (iv) none of the above
- d) A single symbolic object can be created with thecommand.
(i) findsym (ii) sym (iii) collect (iv)fsym
- e) The function.....removes a field from a structure.
(i) cell array (ii) rmfield (iii) fprintf (iv) none of above

4. True or False

- a) who command removes all variables.
- b) To find the roots of a polynomial we use polyval command.
- c) Each for command in a program must have an end command.
- d) Several symbolic variables can be created in one command by using the syms command
- e) The variables f and fstruct are not the same.

SECTION B - K3 (CO2)

Answer any TWO of the following

(2 x 10 = 20)

- 5. Demonstrate the following array addressing with an appropriate example:
(i) Adding elements to a vector

	(ii) Adding elements to a matrix (iii) Deleting elements in a vector and matrix
6.	Illustrate the use of rand, rand(1,n), and randn command. Write the difference between each of them with an example.
7.	Illustrate the structure of the switch case statement. Also explain how does the switch case statement work?
8.	Brief view command and also, write a program to plot a sphere and cylinder by using MATLAB 3D – command.

SECTION C – K4 (CO3)

Answer any TWO of the following **(2 x 10 = 20)**

9.	Explain the following commands in detail: (i) xlabel and ylabel command (ii) The title command (iii) The text and the legend command
10.	How will you create anonymous function in MATLAB? a. Write one example for an anonymous function which has one independent variable. b. Write one example for an anonymous function which has two independent variables.
11.	Write the steps involved in creating surface and mesh plots. Also write a program that makes a mesh (or surface) plot of the function $z = \frac{xy^2}{x^2+y^2}$ over the domain $-1 \leq x \leq 3$ and $1 \leq y \leq 4$.
12.	Explain the following data structure in MATLAB. (i) Categorical arrays (ii) Table arrays

SECTION D – K5 (CO4)

Answer any ONE of the following **(1 x 20 = 20)**

13.	Describe the types of conditional statements and explain the following with the flowchart. (i) The if-end structure. (ii) The if-else-end structure (iii) The if-elseif-else-end structure.
14.	Interpret the following MATLAB command which is used to change the form of an existing symbolic expression with an example. i) The collect command, ii) The expand command, iii) The factor command, iv) the simple command.

SECTION E – K6 (CO5)

Answer any ONE of the following **(1 x 20 = 20)**

15.	Describe in detail about the structure of the function file and various parts of the function file with an example.
16.	What are structures? Explain in detail about vector of structures and nested structures.

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