LOYOLA COLLEGE (AUTONOMOUS) CHENNAI – 600 034

M.Sc. DEGREE EXAMINATION – **STATISTICS**

THIRD SEMESTER – **NOVEMBER 2024**

PST3ID01 – DATA VISUALIZATION AND MATLAB THEORY

Date: 16-11-2024 Dept. No. Max. : 100 Marks

Time: 01:00 pm-04:00 pm

	SECTION A – K1 (CO1)	
	Answer ALL the questions	**(5 x 1 = 5)**
1	**MCQ**	
a)	What do we use to define a block of code in python language i)Key ii) Brackets iii) indentation iv) None of these	
b)	Which of the following is a Python set? i){1, 2, 3} ii) [1,2,3] iii) (1,2,3) iv) {Num1:1,Num2:2}	
c)	To display histogram which function can be used i) his ii) hist iii) Histogram iv) None of these	
d)	The command _____ will not have as much white space (blank lines) between subsequent commands and output. i) format compact ii) format long iii) format loose iv) format short	
e)	How can we group the elements in a 3-d bar graph? i) Give 'grouped' as style input to bar3() command ii) Give 'grouped' as style input to bar() command iii) Give 'group' as style input to bar3() command iv) Give 'group' as style input to bar() command	
	SECTION A – K2 (CO1)	
	Answer ALL the questions	**(5 x 1 = 5)**
2	**Fill in the blanks**	
a)	The Python Programming Language was developed by _____.	
b)	_____ Plot is described as five-number summery plot.	
c)	The recommended way to load matplotlib library is_____.	
d)	_____ data type ranges from -128 to 127.	
e)	Let X = {2, 14, 26, 19, 2, 31, 17}. The MATLAB command to compute mean of X is _____.	
	SECTION B – K3 (CO2)	
	Answer any THREE of the following	**(3 x 10 = 30)**
3	Explain the applications of Python programming?	
4	Describe the types of arguments in Python programming with an example.	

5	How to customize the scatterplot using bokeh package?
6	Using appropriate examples, compose a brief note on various selection statements in MATLAB.
7	Write a brief essay about symbolic variables and expressions. Also, explain the following built-in commands that works on symbolic expressions: i) simplify ii) collect iii) expand iv) factor v) subs

SECTION C – K4 (CO3)

Answer any TWO of the following **(2 x 12.5 = 25)**

8 Write a user defined function in Python to calculate correlation coefficient for the following data

X	1	2	3	4	5
Y	3	6	9	12	15

9 Write a python code and output for categorical plot, relationship plots and regression plot using seaborn package.

10 a) What is a user-defined function? Write the syntax for creating an user-defined function. Explain the above by constructing a user-defined function of your own.

b) Write a brief essay about MATLAB assignment operator using relevant examples.

11 Write a short note on various 2D and 3D plots in MATLAB.

SECTION D – K5 (CO4)

Answer any ONE of the following **(1 x 15 = 15)**

12 Explain the following plotting functions in python with an example:
(i) bar (ii) line (iii) pie (iv) scatter plot (v) Box Plot

13 a. Explain linspace and logspace command in MATLAB each with an example. (5)
b. Explain the three basic different operations or modes on files in MATLAB with appropriate examples. (10)

SECTION E – K6 (CO5)

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

14 a. Explain the following data types in python programming with suitable examples.
i) Python Dictionary ii) Python List (10)
b. Write the code and output for plotting the pdf of normal distribution. (10)

15 a. Discuss the process of modifying the plot color, line styles and data markers when you assign the plotted figure to a variable. (12)

b) Construct a movie for sine function over the limit -2π to 2π by witing a script file. (8)

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