## LOYOLA COLLEGE (AUTONOMOUS), CHENNAI - 600034

M.Sc. DEGREE EXAMINATION - STATISTICS

THIRD SEMESTER - NOVEMBER 2023
PST3ID01 - DATA VISUALIZATION AND MATLAB THEORY

Date: 09-11-2023
Dept. No.
Max. : 100 Marks
Time: 01:00 PM - 04:00 PM

## SECTION A - K1 (CO1)

Answer ALL the questions
1 MCQ
a) The key and value are separated with
i),
ii) ;
iii) :
iv) \#
b) Which of the following is used for variable length arguments?
i)^
ii)!
iii) @
iv) *
c)

Which function is used to create a scatterplot in Seaborn package?
i) sns.catplot() $\quad$ ii) sns.relplot() $\quad$ iii) sns.regplot() iv) sns.barplot()
d) Which is the invalid variable name in MATLAB?
i) $x 6$
ii) last
iii) $6 x$
iv) z
e) What is the final value of $j$ from the following code?

$$
\begin{aligned}
& \text { for } \mathrm{j}=(0: 3) \\
& \mathrm{j}=\mathrm{j}+1 ; \\
& \text { end }
\end{aligned}
$$

i)syntactical error
ii) declaration error
iii) 3
iv) 4

## SECTION A - K2 (CO1)

Answer ALL the questions $\quad(5 \times 1=5)$
2 Fill in the blanks
a) Python uses ___ for compiling the source program.
b) The "def" keyword uses the ___ operator.
c) Values which are displayed on $x$-axis is called
d) MATLAB command is used to reduce the spacing between lines in command window.
e) Let $\mathrm{X}=\{22,4,6,9,12,33,7,3\}$. The MATLAB command to compute mode of X is
SECTION B - K3 (CO2)

## Answer any THREE of the following

3 What are the applications of Python Programming languages?
4 What is a package? List the name packages for data visualization.
5 Write a user defined function in Python to calculate mean and standard deviation for 5, 8, 12, 15, 20, $22,25,30,33,35$.
6 How could one refer and modify an element or a group of elements in MATLAB? Make use of a matrix to explain the above.
7 Explain the following MATLAB commands using suitable examples:
simplify
b) surf
c) rand
d) bar3
e) $\log \log$

8 Write a python program for conditional statement. Give your own example for if statement, if else statement and elif statement.
$9 \quad$ List the types of data visualization tool using matplotlib with example.
10 Explain the three basic different operations or modes on files in MATLAB with appropriate examples.
11 Briefly explain about the various looping statements in MATLAB with suitable examples.

## SECTION D - K5 (CO4)

## Answer any ONE of the following

$(1 \times 15=15)$
12 Write a detailed note on various operations of python datatype with suitable example.
13 a. What are the different types of output functions in MATLAB? Explain each with an example. (5)
b. Construct a function that creates a multiplication table of order $m \mathrm{xn}$, where m and n are positive integers.

## SECTION E - K6 (CO5)

Answer any ONE of the following
14 a) Write the python code for constructing Multiple Bar diagram and box plot to visualize the following data

| Month_Region | March | April | May | June | July |
| :--- | :--- | :--- | :--- | :--- | :--- |
| East | 2 | 9 | 3 | 11 | 9 |
| West | 4 | 8 | 7 | 3 | 12 |
| North | 5 | 2 | 8 | 10 | 11 |

b) Write the python code for relationship plot and regression plot for the following data:

| Values of <br> height (cms) | 151 | 174 | 138 | 186 | 128 | 136 | 179 | 163 | 152 | 131 |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Values of <br> weight (Kg) | 63 | 81 | 56 | 91 | 47 | 57 | 76 | 72 | 62 | 48 |

15 a. Discuss the process of modifying the plot color, line styles and data markers when you assign the plotted figure to a variable.
b. Explain the functions sym2poly and poly2sym in MATLAB.
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