



QP CODE: 25050812



Reg No :

Name :

MSc DEGREE (CSS) EXAMINATION DECEMBER 2025

First Semester

MSC Data Analytics

**Core Courses - ST050105 - PROGRAMMING AND DATA STRUCTURES WITH
PYTHON**

2020 Admission Onwards

C138B51F

Time: 3 Hours

Weightage: 30

Part A (Short Answer Questions)

*Answer any **eight** questions.*

*Weight **1** each.*

1. Define variables in Python? How are values stored in variables?
2. Define the usage of functions.
3. What are aggregations? Explain how to calculate the sum of the elements of an array.
4. What are the boolean Ufuncs available? Explain with example.
5. Discuss the functioning of fancy indexing with illustrations.
6. Discuss the use of indexers loc, iloc and ix.
7. What is the advantage of using hierarchical indexing?
8. What is the usage of pd.append()?
9. In how many ways can we specify line style and color together for a simple line plot? Give examples.
10. What is a contour plot?

(8×1=8 weightage)

Part B (Short Essay/Problems)

*Answer any **six** questions.*

*Weight **2** each.*

11. Explain the following with examples:
 - a) Python operators
 - b) Python loops
12. Explain list comprehension with example.
13. What is method overriding?





14. How can sorting be performed faster in NumPy?
15. Describe the different structured array creation methods.
16. Elaborate the working of groupby() function.
17. What is Pivot Table? Explain with examples if necessary.
18. Briefly explain the visualization of a 3-D plot.

(6×2=12 weightage)

Part C (Essay Type Questions)

*Answer any **two** questions.*

Weight 5 each.

19. Explain the functioning of the following in the 're' module:
 - a) Metacharacters
 - b) Special sequences
 - c) Set
20. Write a note on the basics of NumPy arrays. Include:
 - > Array Attributes
 - > Array Indexing
 - > Array Slicing
 - > Reshaping, Concatenation and Splitting
21. Why eval() and query() are considered High Performance operations? Where are they used?
22.
 - a) Elucidate Histograms. Mention its significance.
 - b) Demonstrate how to plot a normal histogram using Matplotlib.
 - c) Demonstrate how to plot 2-D histogram using Matplotlib.

(2×5=10 weightage)

