(PAGES 2)

D5BCD2301 **Reg. No.....**

Name: .....

FIFTH SEMESTER B.Sc. DEGREE EXAMINATION, NOVEMBER 2025

(Regular/Improvement/Supplementary)

COMPUTER SCIENCE AND MATHEMATICS (DOUBLE MAIN)

GDCS5B07T: DATA ANALYTICS USING PYTHON

Time: 2 Hours **Maximum Marks: 60**

SECTION A: Answer the following questions. Each carries *two* marks.

(Ceiling 20 marks)

1. Which function is used to add a title to a matplotlib?
2. What is the purpose of the histplot() function in Seaborn?
3. Explain the concept of indexing in NumPy arrays with an example.
4. How do you display a plot in Matplotlib after creating it?
5. Name any four built-in data types in Python with examples.
6. How do you write a for loop in Python? Provide a simple example.
7. Which function counts the occurrences of each category in a column?
8. What is the difference between a class and an object in Python?
9. Define data analytics.
10. What is the difference between a Pandas Series and a DataFrame?
11. Define reinforcement learning.
12. What is meant by model generalization in machine learning?

SECTION B: Answer the following questions. Each carries *five* marks.

(Ceiling 30 marks)

13. Explain how to create a bar chart and a scatter plot using Matplotlib. Briefly describe the steps involved in data analytics.
14. What is model selection in machine learning? Describe at least two techniques for selecting the best model for a given task.
15. Describe how to create a bar plot in Pandas. Provide a code example that shows how to customize the bar plot with different colors and labels.

(PTO)

16. Describe how linear regression works and how it is used in machine learning for predictive modeling. Provide an example.
17. Explain how to acquire and load datasets in scikit-learn. Describe one common dataset provided by scikit-learn and how it is used in a machine learning problem.
18. Discuss file handling in Python. Explain how to open, read, write, and close files with examples using appropriate Python code.
19. What are n-dimensional arrays in NumPy? Explain how they differ from regular Python lists. Include examples of creating and working with NumPy arrays.

SECTION C: Answer any *one* question. The question carries *ten* marks.

20. Discuss the basic data types in python. Explain how each type works and to convert between these types.
21. What is the purpose of the groupby() function in Pandas? Explain how to group data by a specific column and apply aggregation functions like sum() and mean(). Provide a simple example.

(1 x 10 = 10 Marks)