END SEMESTER EXAMINATION - OCTOBER 2025

SEMESTER 7: INTEGRATED M.Sc. PROGRAMME COMPUTER SCIENCE - DATA SCIENCE

COURSE: **21UP7CRMCP24: ADVANCED PYTHON PROGRAMMING FOR DATA SCIENCE**

(For Regular 2022 Admission & Supplementary 2021 Admission)

Time: Three Hours   Max. Weightage: 30

PART A
Answer any 8 questions

1. List any five built-in mathematical functions of NumPy module, along with
   their purpose.   (R)

2. Differentiate between stemming and lemmatization in NLP.   (U)

3. Write the syntax of creating a constant and variable in TensorFlow.   (R)

4. State the purpose of `hue` attribute when plotting with seaborn.   (U)

5. Define semi-supervised learning. Give an example for the same.   (U)

6. State the purpose of TensorFlow. List any two APIs of TensorFlow.   (U)

7. Explain reference counting in garbage collection.   (U)

8. Briefly explain decision trees in ML.   (U)

9. State the purpose of `iloc` in Python.   (R)

10. List any two port numbers along with their service names.   (R)

                                                                    (1 x 8 = 8 weight)

PART B

Answer any 6 questions

11. With an example, explain the process of one-hot encoding.   (A)

12. With a sample program, explain how complex data objects can be serialized.   (A)

13. Explain how regular expressions aid in converting unstructured data
    into structured form.   (A)

14. Explain how Keras helps in implementing CNN with example program.   (A)

15. With an example for each, explain the Manhattan and Euclidean normalization.   (A)

16. Differentiate between pickle and marshal in python.   (An)

17. Differentiate between supervised and unsupervised learning in detail.   (An)

18. With a sample code, explain how `SELECT` and `UPDATE` operations on MySQL
    database can be performed in Python.   (A)

                                                                    (2 x 6 = 12 weight)

PART C

Answer any 2 questions

19. Write a sample program for sending simple mail using python. (A)
20. Demonstrate simple linear regression in ML with an example program. (A)
21. Implement K-Means clustering using SciPy library. (A)
22. Discuss the various methods to handle missing data from an iterable / dataset. (An)

(5 x 2 = 10 weight)