A–0728

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CDSA-102

Certificate in Data Science and Applications

(Programming for Data Science)

Ist Semester Examination, June 2025

Time : 2:00 Hrs. Max. Marks : 100

Note* :–** This paper is of Hundred (100) marks divided into Two (02) Sections 'A' and 'B'. Attempt the questions contained in these Sections according to the detailed instructions given therein. ***Candidates should limit their answers to the questions on the given answer sheet. No additional (B) answer sheet will be issued.

Section–A

(Long Answer Type Questions) 2×26=52

***Note* :–** Section 'A' contains Five (05) Long-answer type questions of Twenty Six (26) marks each. Learners are required to answer any *two* (02) questions only.

1. Explain the concept of object-oriented programming (OOP) and its core principles, including inheritance, encapsulation, polymorphism, and abstraction, with examples. [26]

2. Discuss the role of control statements like break, continue, and pass in modifying the flow of loops in Python. Provide examples for each. [26]

3. Discuss the various methods and functions available in R for importing data from different file formats, such as CSV, Excel, and databases. [26]

4. Give a suitable example of Python functions, including the use of arguments, return values, and the distinction between built-in and user-defined functions. [26]

5. Discuss the differences between procedural, functional, and event-driven programming paradigms, highlighting their advantages and typical use cases. [26]

Section–B

(Short Answer Type Questions) 4×12=48

***Note* :–** Section 'B' contains Eight (08) Short-answer type questions of Twelve (12) marks each. Learners are required to answer any *four* (04) questions only.

1. What are the key features of R programming that make it suitable for statistical analysis and data visualization ? Explain. [12]

2. Explain Python's data types, such as integers, floats, strings, lists, tuples, and dictionaries, with examples of their usage. [12]

3. How are variables created, assigned, and managed in R programming, and what are the common data types used for variable storage ? Explain with example. [12]

4. What is the importance of debugging and testing in the programming process, and what tools and techniques are commonly used for these purposes ? [12]

5. What are Python's control flow statements, and how do they work ? Explain using example. [12]

6. What are the key features of Python that make it a popular programming language for beginners and professionals as well ? [12]

7. What is the role of packages in R programming ? How can they be installed, loaded, and used for specific tasks ? [12]

8. Describe Python's error-handling mechanisms using try-except blocks, and explain how they improve program robustness. [12]

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