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CDSA–102

Certificate in Data Science and Applications

(Programming for Data Science)

1st Semester Examination, Session December 2024

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 describe its four main principles.

2. What is debugging ? Describe some common debugging techniques used by programmers. What are environments in R, and how do they affect function scoping ?

3. What are variables in Python, and how do you declare them ? Explain the difference between lists and tuples in Python.

4. What are packages in R ? How can I install packages in R ? Explain.

5. Describe how functions are defined in R. Give an example of user defined function in R.

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. Describe Python's function definition syntax and the concept of return values.

2. What is the difference between a compiler and an interpreter, and how does each approach affect the execution of a program ?

3. Explain the concept of data frames in R, and how do you create data frames in R ?

4. Explain the concept of nested functions in Python, also explain how do they interact with their scope.

5. What are factors in R, and why are they useful in data analysis ?

6. What are Python's control flow statements, and how do they work ? Explain using example.

7. What are vectors in R, and how do you create them ?

8. What are the different ways to define default parameter values for functions in Python, and what should one be cautious about when using them ?

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