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Following Paper ID and Roll No. to be filled in your Answer Book.

PAPER ID : 33709 Roll No. | | | | | | | | | | |

B. Tech. Examination, 2024-25

(Odd Semester)

CONCEPTS OF DATA SCIENCE WITH PYTHON

Time : Three Hours] *[Maximum Marks : 60*

Note :– Attempt all questions.

SECTION–A

1. Attempt all parts of the following : 8×1=8

   (a) Suppose list 1 is [1, 3, 2], what is the output of list 1 * 2?

   (b) What is the output when we execute list ("hello")?

   (c) What is the difference between 10/3 and 10//3?

   (d) What is the result of 10**3?

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(e) What does range (1, 10, 2) return?

(f) What is slicing in Python?

(g) Is a string immutable or mutable in Python?

(h) What are the four components of data science?

SECTION – B

2. Attempt any two parts of the following : 2×6=12

(a) Describe the concept of list comprehensions in Python. Provide an example where list comprehension can be used to square all even numbers from a given list.

(b) Describe the typical workflow or life cycle of a data science project.

(c) Explain the purpose and working of the pandas library. How does it help in data analysis?

(d) Write a python program to combine two lists into a dictionary, where the elements of the first one serves as the keys and the elements of the second one serves as the values.

SECTION – C

Note :– Attempt all questions. Attempt any two parts from each questions. 8×5=40

3. (a) Explain the difference between structured, semi-structured and unstructured data with examples.

(b) Write a Python function to calculate the factorial or a number using recursion.

(c) How does break, continue and pass work in Python? Explain with an example.

4. (a) Define data science and explain its importance in modern businesses.

(b) Demonstrate how to read and write CSV files using Python's pandas library?

(c) What is missing data in a dataset? Discuss different strategies to handle missing data in Python.

5. (a) What are the main data structures in Python used for data manipulation? Explain with examples.

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(b) Give a two list. Create a third list by picking an odd-index element from the first list and even index elements from second.

(c) What is the difference between a mutable data type and an immutable data type?

6. (a) Explain the key differences between Python and other programming languages commonly used for data analysis.

(b) Discuss the key features of Python that make it suitable for data science tasks.

(c) What is data visualization and why is it important in data science? Discuss different types of visualizations used in data analysis.

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