JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech III Year I Semester Examinations, January/February – 2023
INTRODUCTION TO DATA SCIENCE
(Computer Science and Engineering – Artificial Intelligence and Machine Learning)

Time: 3 Hours **Max. Marks: 75**

Note: i) Question paper consists of Part A and Part B.
ii) Part A is compulsory, which carries 25 marks. In Part A, Answer all questions.
iii) In Part B, Answer any one question from each unit. Each question carries 10 marks and may have a, b as sub-questions.

PART – A

(25 Marks)

1. a) What is data science? [2]

b) Explain basic data types in R. [3]

c) Write any two ordinal attributes with an example. [2]

d) How to calculate the standard deviation for any data? [3]

e) What is a vector? [2]

f) What is a List? How does it differ from a vector? [3]

g) List out Mathematical Functions in R. [2]

h) How do you write a function in R? [3]

i) Write the importance of data reduction strategies. [2]

j) Explain the Regression mechanism with an example. [3]

PART – B

(50 Marks)

2. a) Demonstrate how to set up R- Environment with an example.

b) What is a Model? Explain how to fit a model with an example. [5+5]

OR

3. Explain probability distributions with examples in data science. [10]

4. a) What is Mean, Median, and Mode? Explain with an example.

b) Explain Range, Quartiles with examples. [5+5]

OR

5. a) Explain graphic displays of basic statistical descriptions of data.

 b) Describe how to process Attributes by the Number of Values? [5+5]

6.a) Explain vector arithmetic operations with examples.

 b) What is factor Levels? How to summarize a Factor level. [5+5]

OR

7. a) What is a Data Frame? Explain the data frame with an example.

 b) Explain how to convert Lists to Vectors process. [5+5]

8. a) Demonstrate Logical Operators and Vectors with example programs.

 b) Write a Program to display numbers from 1 to 5 using for loop. [5+5]

OR

9. a) What is the Nested function? Write nested functions usage with examples.

 b) What is Recursion? Explain recursion with a sample program. [5+5]

10. a) Illustrate the purpose of Principal Component Analysis. Explain with an example.

 b) Explain various geometric projection visualization techniques. [5+5]

OR

11.a) Demonstrate data Cube Aggregation with example.

 b) Explain the importance of Icon-Based Visualization Techniques. [5+5]

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