Code No:M155AC **R18**

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech III Year I Semester Examinations, March - 2024
INTRODUCTION TO DATA SCIENCE
(Minor Program in Data Science)

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

Note: i) Question paper consists of Part A, 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 meant by fitting a model in statistics?	[2]
b)	Write a short note on probability distributions.	[3]
c)	What is an attribute?	[2]
d)	List the advantages of histograms as a graphic display.	[3]
e)	What are arrays in R?	[2]
f)	How do you convert lists to vectors in R?	[3]
g)	What are nested functions?	[2]
h)	How do you loop over a list in R?	[3]
i)	Define Principal Components Analysis (PCA).	[2]
j)	List the challenges in visualizing big data.	[3]

PART – B

(50 Marks)

2.a) Discuss the concept of data science and its significance in today's world.
b) Elaborate on the process of datafication and its implications. [5+5]

OR

3.a) Differentiate between populations and samples.
b) Discuss basic data types in R with examples. [5+5]

4.a) Describe the calculation and interpretation of median and mode.
b) Differentiate between nominal and ordinal attributes. [5+5]

OR

5. Compare and contrast range, quartiles, variance, standard deviation, and inter-quartile range. [10]

6.a) Discuss vector subsetting in R with examples.
b) Explain the creation and naming of matrices in R. [5+5]

OR

7.a) Discuss sorting techniques for data frames in R.
b) Explain how to create a named list in R. [5+5]

8.a) Explain how do you apply relational operators and logical operators to vectors.
b) Explain the process of writing a function in R with an example. [5+5]

OR

9.a) Compare while loop with for loop in R.
b) Explain mathematical functions in R and provide examples of their usage. [4+6]

10. Explain the following:
a) Parametric data reduction
b) Application of histograms. [5+5]

OR

11. Compare and contrast pixel-oriented, geometric projection, and icon-based visualization techniques. [10]

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