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Question Paper Code: BCS001

Jawaharlal Nehru Technological University Hyderabad

M.Tech I Semester End Examinations (Regular) - January, 2018

Regulation: .–R16

FOUNDATIONS OF DATA SCIENCES

(Computer Science and Engineering)

Time: 3 Hours **Max Marks: 70**

Answer ONE Question from each Unit
All Questions Carry Equal Marks
All parts of the question must be answered in one place only

UNIT – I

1. (a) Describe the roles and responsibilities in a data science project. [7M]
   (b) Write an R script to display Fibonacci sequence using recursion. [7M]
2. (a) What is the basic syntax for creating a matrix in R. Write the R script to access the elements of a matrix. [7M]
   (b) Write the R script to perform addition, subtraction, multiplication, division operations on matrices. [7M]

UNIT – II

3. (a) Create a XML file with employee id, name, and salary, join date, dept for 10 employees. [7M]
   (b) Write an R script to get number of nodes present in XML file created above. [7M]
4. (a) Create a JSON file with employee id, name, and salary, join date, dept for 10 employees. [7M]
   (b) Write an R script to read the XML file created in A into R by installing appropriate packages required. [7M]

UNIT – III

5. (a) Discuss Naïve Bayes memorization methods with its applications. [7M]
   (b) What is K-fold cross-validation and explain by taking a data set as example? [7M]
6. (a) Discuss about clustering in detail? Elaborate k means algorithm. Write a R Script to implement Manhattan distance [7M]
   (b) List the different types of clustering. Write about k-nn algorithm. Write a R Script to cluster the mtcars dataset using k-nn algorithm. [7M]

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UNIT – IV

7. (a) Compare various learning algorithms in detail and explain them with formulas. [7M]
   (b) Describe null hypothesis and alternative hypothesis with examples. What is p- value and give its importance. [7M]

8. (a) Describe the basic structure of back propagation ANN algorithm. Elaborate each layer importance and error propagation function. [7M]
   (b) Describe the basic principle of sampling theory with some applications. [7M]

UNIT – V

9. (a) How to partition the window to get more number of plots? Discuss on single and multi object plots in R. [7M]
   (b) Elaborate how to export a graph using graphics parameters. How to export the text data to plot with example. [7M]

10. (a) How to plot the word data based n frequency of words. Write R script to plot a data frame having 2 data frames using relevant plot. (Assume your own data frames) [7M]
    (b) Generalize the graphical analysis in data analysis? List the various plots in R and explain in detail. [7M]

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