**POORNIMA UNIVERSITY, JAIPUR**

**END SEMESTER EXAMINATION, November 2022**

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|  | **3BT5173** | Roll No. | Total Printed Pages: 2 |
| **3BT5173** |  |
| B. Tech. III Year V-Semester (Main/Back) End Semester Examination, November 2022  **(DS)** | |
| **BDS05103 : R Programming Language** | | | |

# Time: **3** Hours. Total Marks: **60**

Min. Passing Marks: **21**

Attempt **five** questions selecting one question from each Unit. There is internal choice from Unit I to Unit V. Marks of each question or its parts are indicated against each question / parts. Draw neat sketches wherever necessary to illustrate the answer. Assume missing data suitably (if any) and clearly indicate the same in the answer.

Use of following supporting material is permitted during examination for this subject.

# **1.--------------------------Nil--------------------** **2.------------------Nil-----------------------**

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|  |  | **UNIT-I (CO1)** | **Marks** | **Bloom Level** |
| **Q.1** | **(a)** | What are the different forms of data types and how to test the data type in R? Give one example for each. | **(6)** | **Understanding** |
|  |  |  |  |  |
|  | **(b)** | Write the installation steps to set up environment to write R programming? | **(6)** | **Apply** |
|  |  |  |  |  |
|  |  | **OR** |  |  |
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| **Q.2** | **(a)** | Write R script to generate calculator using basic operations and inbuilt functions with suitable example? | **(6)** | **Understanding** |
|  |  |  |  |  |
|  | **(b)** | How do you install the packages in R? Illustrate with example how installed package is used. | **(6)** | **Apply** |
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|  |  | **UNIT-II (CO2)** |  |  |
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| **Q.3** | **(a)** | Describe the multiple ways to read and write data from disc. Elaborate R functions to choose character, numerical input dynamically from user. | **(6)** | **Apply** |
|  |  |  |  |  |
|  | **(b)** | Which data type is used to implement lapply() and sapply() function.  Explain the proper output of given code also explain the same  movies <- c("SPYDERMAN","BATMAN","VERTIGO","CHINATOWN")  movies\_lower <-lapply(movies, tolower)  str(movies\_lower).  How the list created by above code is converted into vector. Convert the same with proper function. | **(6)** | **Apply** |
|  |  |  |  |  |
|  |  | **OR** |  |  |
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| **Q.4** | **(a)** | What is difference between lapply and sapply function.Explain sapply function with proper syntax and parameter passed.  Explain the output of following R code  dt <- data.frame(c(2,10,9,3,7,5))  lmn\_cars <- lapply(dt, min)  smn\_cars <- sapply(dt, min)  lmn\_cars  smn\_cars | **(6)** | **Understand** |
|  |  |  |  |  |
|  | **(b)** | Analyze the control structures with conditional statements in R with suitable example. Create a user defined function fact(j) to return the the factorial of j using functions in R. | **(6)** | **Apply** |
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|  |  | **UNIT-III (CO3)** |  |  |
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| **Q.5** | **(a)** | Write a R program to explain socket programming? | **(6)** | **Understand** |
|  |  |  |  |  |
|  | **(b)** | Write the R script which include relevant packages and procedure to access .csv and .exl files. Elaborate with suitable example. | **(6)** | **Apply** |
|  |  |  |  |  |
|  |  | **OR** |  |  |
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| **Q.6** | **(a)** | Create String vector x with following character “Poornima” “University” “in” “Jaipur” “is” “among” “the” “premium” “University” “in” “Jaipur”. What will be the output when following function is called (1) grep(“Jaipur”, x, ignore.case=FALSE) (2) nchar(x) (3) x<- “Programming is fun” substr(x,16,18) give the output and explain the parameter passed. | **(6)** | **Understand** |
|  |  |  |  |  |
|  | **(b)** | Differentiate readline and scane function with suitable example and relevant outputs. | **(6)** | **Understanding** |
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|  |  | **UNIT-IV (CO4)** |  |  |
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| **Q.7** | **(a)** | What is difference between t test and f test? Explain the algorithm to perform t test and what function is used in R to perform t test in R. | **(6)** | **Apply** |
|  |  |  |  |  |
|  | **(b)** | Write Short Notes on (1) Dependent and independent variable (2) correlation and Regression Coefficient | **(6)** | **Understand** |
|  |  |  |  |  |
|  |  | **OR** |  |  |
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| **Q.8** | **(a)** | Construct a contingency table for given vector "Name" = c("Amiya", "Rosy", "Asish"),    "Gender" = c("Male", "Female", "Male"). Show the proper out for same and also explain why is it used what kind of interpretation we can get with Contingency table. | **(6)** | **Apply** |
|  |  |  |  |  |
|  | **(b)** | Construct matrix object as table. Data frame object as table with suitable example also explain the same? | **(6)** | **Apply** |
|  |  |  |  |  |
|  |  | **UNIT V (CO5)** |  |  |
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| **Q.9** | **(a)** | Given the age of male as m\_age=c(35,40,28,38,30,36,45,20,7,17), female age as f\_age=c(60,20,37,19,15,4,28,18,3,35). Plot the (2) Box plot (2) scattered plot (3) Bar plot. All the plots must have proper label and axis defined. Also save the generated plot in pdf format. | **(6)** | **Understanding an apply** |
|  |  |  |  |  |
|  | **(b)** | Differentiate parametric test with respect to non-parametric test. Also give the r functions which is used for parametric and non-parametric test explain parameter used in functions. | **(6)** | **Understanding an apply** |
|  |  |  |  |  |
|  |  | **OR** |  |  |
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| **Q.10** |  | Edutech company grouped the students in 3 groups. and stored the marks of each students.  Group1=(85,86,88,75,78,94,98,79,71,80) Group2=(91,92,93,85,87,84,82,88,95,96) Group3=(79,78,88,94,92,85,83,85,82,81).  Construct the ANOVA test for the given data with anova table. Given F critical value as 3.3542 what interpretation you can draw from the test. | **(12)** | **Apply** |