**SAVEETHA SCHOOL OF ENGINEERING**

**SAVEETHA INSTITUTE OF MEDICAL AND TECHNICAL SCIENCES**

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| **Course Code: ITA04** | **Course Name: Statistics with R Programming** | |
| **Branch: CSE** |  | **Academic Year: 2019-2020 (Odd)** |
| **Date of Exam:** | **Max. Marks: 20M** | **Time: 1 hour** |

**ANSWER ALL THE QUESTIONS**

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| **S.No** | **CLASS TEST 1** | **MARKS** | **COs** | **BT LEVEL** |
| 1 | What are the different forms of data types and how to test the data type in R? Give one example for each. | 10 | CO1 | K3 |
| 2 | 1. Write a R program to create a sequence of numbers from 20 to 50 and find the mean of numbers from 20 to 60 and sum of numbers from 51 to 91. 2. Write a R program to create an array with three columns, three rows, and two "tables", taking two vectors as input to the array. Print the array. | 10 | CO1 | K3 |

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| **S.No** | **CLASS TEST 2** | **MARKS** | **COs** | **BT LEVEL** |
| 1 | Explain the various types of control statements in R programming. Give examples. | 10 | CO2 | K3 |
| 2 | Write R code function to generate first n terms of a Fibonacci series | 10 | CO2 | K3 |

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| **S.No** | **CLASS TEST 3** | **MARKS** | **COs** | **BT LEVEL** |
| 1 | Write R code to perform the operations with following data exam\_data = data.frame( name = c('Anastasia', 'Dima', 'Katherine', 'James', 'Emily', 'Michael', 'Matthew', 'Laura'), score = c(12.5, 9, 16.5, 12, 9, 20, 14.5, 13.5), attempts = c(1, 3, 2, 3, 2, 3, 1, 1), qualify = c('yes', 'no', 'yes', 'no', 'no', 'yes', 'yes', 'no'))  (a) Create a Data frame  (b) Extract score and attempts column by their names  (c) Extract name and qualify column by their postions  (d) To extract 3rd and 5th rows with 1st and 3rd columns  (e) To extract ‘James’ details | 10 | CO3 | K3 |
| 2 | Create Data Frame for following data n <- c(1, 1, 2, 2), time <- c(1, 2, 1, 2) , x <- c(6, 3, 2, 5), y <- c(1, 4, 6, 9)  (i)Write a R code to melt the data and display as a long-format data?  (ii) Write a R code, use cast function appropriately to compute the average of x and y with respect to “time”. | 10 | CO3 | K3 |

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| **S.No** | **CLASS TEST 4** | **MARKS** | **COs** | **BT LEVEL** |
| 1 | Calculate the coefficient of correlation to the following data  x <-10, 12 ,18, 24, 23, 27  y <-13 ,18, 12 ,25 ,30 ,10 | 10 | CO4 | K3 |
| 2 | Suppose a hospital tested the age and body fat data for 18 randomly selected adults with the following result    Calculate the standard deviation of age and %fat. | 10 | CO4 | K3 |

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| **S.No** | **CLASS TEST 5** | **MARKS** | **COs** | **BT LEVEL** |
| 1 | Explain in detail about the high level plotting functions. | 10 | CO5 | K3 |
| 2 | Suppose that the data for analysis includes the attribute age. The age values for the data tuples are (in increasing order) 13, 15, 16, 16, 19, 20, 20, 21, 22, 22, 25, 25, 25, 25, 30, 33, 33, 35, 35, 35, 35, 36, 40, 45, 46, 52, 70.  Can you find (roughly) the first quartile (Q1) and the third quartile (Q3) of the data?.  Draw the Boxplot with that information. Give the R code for same. | 10 | CO5 | K3 |

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| **S.No** | **ASSIGNMENT 1** | **MARKS** | **COs** | **BT LEVEL** |
| 1 | The price of one kg of rice is Rs. 40.75 and one kg of sugar is Rs. 30. Write R program to get the total amount of 2kg rice and 5kg sugar purchase. | 10 | CO1 | K3 |
| 2 | 1. Create vector of numeric, complex, logical and character with types of length 6. 2. Write a R program to add a new item g4 = "R Prog" to a given list. given list: (g1 = 1:20, g2 = "Python", g3 = "HTML"). | 10 | CO1 | K3 |

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| **S.No** | **ASSIGNMENT 2** | **MARKS** | **COs** | **BT LEVEL** |
| 1 | Demonstrate the use of functions   1. Develop a simple calculator in R. 2. Write a function called kelvin\_to\_celsius() that takes a temperature in Kelvin and returns that temperature in Celsius (Hint: To convert from Kelvin to Celsius you subtract 273.15) 3. Demonstrate the creation of a complex number in R. | 10 | CO2 | K3 |
| 2 | A student recorded his/her scores on weekly R programming quizzes that were marked out of a possible 10 points. His/Her scores were as follows:  8, 5, 8, 5, 7, 6, 7, 7, 5, 7, 5, 5, 6, 6, 9, 8, 9, 7, 9, 9, 6, 8, 6, 6, 7  What is the mode of his/her scores on the weekly R programming quizzes? | 10 | CO2 | K3 |

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| **S.No** | **ASSIGNMENT 3** | **MARKS** | **COs** | **BT LEVEL** |
| 1 | Create a data frame and print the structure of the data frame in R.   1. Create a data frame of 5 sonar company Employee details: ID, NAME, OCCUPATION, EMPLOYEE 2. Apply summary() to find the summary of the data in the data frame and display the results.   (iii) Extract data(OCCUPATION) from the data frame.  Expand data frame include SALARY | 10 | CO3 | K3 |
| 2 | Consider the following data present. Create this file using windows notepad . Save the file as input.csv using the save As All files(\*.\*) option in notepad.  i.Use appropriate R commands to read input.csv file.  ii. Analyze the CSV File and compute the following.  a. Get the maximum salary  b. Get the details of the person with max salary  c. Get all the people working in IT department  d. Get the persons in IT department whose salary is greater than 600  e. Get the people who joined on or after 2014 | 10 | CO3 | K3 |

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| **S.No** | **ASSIGNMNET 4** | **MARKS** | **COs** | **BT LEVEL** |
| 1 | Compute the correlation coefficient for the following data and write R code for same  X<-68 ,64 ,75, 50, 64, 80, 75, 40, 55, 64  Y<-62, 58, 68, 45, 81, 60, 68 ,48, 58, 70 | 10 | CO4 | K3 |
| 2 | Explain Skewness and Kurtosis and its types | 10 | CO4 | K3 |

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| **S.No** | **CLASS TEST 5** | **MARKS** | **COs** | **BT LEVEL** |
| 1 | 1. The maximum temperature in Celsius in a week is given as T(35,42,38,25,28,36,40). Draw the bar plot for the given data. Also use legend function to describe hists. 2. ii) Explain the differences between stacked bar plot and bar plot. | 10 | CO5 | K3 |
| 2 | 1. What is Box plot? Explain importance of boxplot with example? 2. Draw a pie chart for the following data Section: I, II, III , IV, V   No.of workers:220,370, 190, 70, 250 | 10 | CO5 | K3 |