

Code No: R1621051

R16

SET - 1

II B. Tech I Semester Regular Examinations, October/November - 2017

STATISTICS WITH R PROGRAMMING

(Com to CSE & IT)

Time: 3 hours

Max. Marks: 70

Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B**)

2. Answer **ALL** the question in **Part-A**

3. Answer any **FOUR** Questions from **Part-B**

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**PART -A**

1. a) Write about vectors in R (2M)
- b) Write about type conversions in R? (2M)
- c) Describe 3 math functions in R? (2M)
- d) Write about lines() function. (2M)
- e) Mention any two applications of t-distribution (2M)
- f) Write about logistic regression (2M)

**PART -B**

2. a) Explain different data structures in R. (7M)
- b) Implement binary search tree with R (7M)
3. a) Explain different types of operators in R. (7M)
- b) Write about control statements in R (7M)
4. a) Write about all summary commands in R? (7M)
- b) What is cumulative sum, product, min, max? Explain with example? Write R functions used for this purpose? (7M)
5. a) Write about scatter plot and histograms with examples? Explain its importance? (7M)
- b) How to plot multiple curves in same graph? Explain with example? (7M)
6. a) Explain about descriptive statistics? Write examples? (7M)
- b) Fit a Binomial distribution to the following data (7M)  
 $x=0 \quad 1 \quad 2 \quad 3 \quad 4 \quad 5$   
 $f=2 \quad 16 \quad 28 \quad 12 \quad 9 \quad 3$
7. a) Write in detail about Random Forest (7M)
- b) The students taught by 3 different methods gave the following performance(marks): (7M)  
A 19,9,12,16,7,14,11  
B 8,13,3,17,15  
C 14,11,10,9,15,16  
Calculate the analysis of variance

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**SET - 2**

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PART -A

1. a) Explain the importance of dataframe? (2M)
- b) Write about complex objects in R. (2M)
- c) Explain about set operations in R. (2M)
- d) Find median and mode of following numbers (2M)
12,13,11,10,9,11,7,11,10,15,16,11
- e) Write about polygon() function (2M)
- f) Mention how you can produce co-relations and covariances in R? (2M)

PART -B

2. a) Write about the following with example (7M)
a)Mean b)Mode c)Median d)Cumulative Sum
e)Cumulative Max f)Cumulative Min g)Cumulative Product
- b) Write about data frame? Write about operations on data frame. (7M)
3. a) Write R code to the function by using if else command (7M)
 $f(x) = x$ if $x < 1/2$
 $= (1-x)$ if $1/2 < x < 1$
 $= 0$ otherwise
- b) Write about nested functions in R. (7M)
4. a) Write about apply method in R? write about lapply,sapply with suitable examples? (7M)
- b) Write about different functions for statistical distribution. (7M)
5. a) How to plot multiple curves in same graph? Explain with example? (7M)
- b) Plot the function $g(t) = (t^2 + 1)^{0.5}$ for t between 0 and 5.(using curve and plot function) (7M)
6. a) Write about Binomial Distribution (7M)
- b) Explain Anova test with example (7M)
7. a) Following are the runs scored by a batsman in 10 consecutive matches: (7M)
22,98,13,54,77,61,45,32,19,85
Compute coefficient of variation
- b) Fit a polynomial of degree 2 to the following data (7M)
X 0 1 2
Y 1 6 17

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**PART -A**

1. a) What are the data structures in R that is used to perform statistical analyses and create graphs? (2M)
- b) Write about linear vector algebra operations. (2M)
- c) Write syntax of if else in R. (2M)
- d) Define mean, median, mode and standard deviation. (2M)
- e) Write R script to create a linegraph. (2M)
- f) what is the use of par() function. (2M)

**PART -B**

2. a) How to apply same functions to all rows and columns of a matrix? Explain with example. (7M)
- b) Write R code to generate first n terms of a Fibonacci series (7M)
3. a) Write about user defined functions in R with suitable example? Explain about default values and in return statements in functions? (7M)
- b) Write a R program to implement quicksort. (7M)
4. a) Write about sort, rank and order functions with examples. Write about functions for statistical distributions. (7M)
- b) Explain about Finding Stationary Distributions of Markov Chains (7M)
5. a) What is Box plot? Explain importance of boxplot with example? (7M)
- b) Draw a pie chart for the following data (7M)  
Section I, II, III, IV, V  
No.of workers 220, 370, 190, 70, 250
6. a) Write about Poisson Distributions (7M)
- b) Explain t-test with example (7M)
7. a) Heights(in cm) of father and son are given as follows (7M)  
Father(X) 150 152 155 157 160 161 164 165  
Son(Y) 154 156 158 159 160 162 161 164  
Fit a regression line predict the height of son given the height of father.
- b) Explain about logistic regression. (7M)

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PART -A

1. a) Explain different matrix operation function in R? (2M)
- b) Write about Boolean operators in R. (2M)
- c) Write about basic math in R? (2M)
- d) Write about plot function. (2M)
- e) Explain dnorm() function (2M)
- f) Define Multiple Regression (2M)

PART -B

2. a) Explain about Variables, constants and Data Types in R Programming (7M)
- b) How to create, name, access, merging and manipulate list elements? Explain with examples. (7M)
3. a) Write about Arithmetic and Boolean operators in R programming? (7M)
- b) How to create user defined function in R? How to define default values in R? Write syntax and examples? (7M)
4. a) Explain functions for accessing the keyboard and monitor, Reading and writing files (7M)
- b) Write a R function to find sample covariance. (7M)
5. a) Write about the following functions with example
a) points() b) legend() c) text() d) locator() (7M)
- b) Describe R functions for Reading a Matrix or Data Frame From a File (7M)
6. a) Fit a poisson distribution to the following data (7M)
x 0,1,2,3,4,5
f 3,9,12,27,4,1
Also test the adequacy of model
- b) Calculate the coefficient of correlation to the following data (7M)
X 10 12 18 24 23 27
Y 13 18 12 25 30 10

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SET - 4

7. a) Fit a straight line $Y=a+bx$ to the following data (7M)
X 12,17,19,25,32,38,43
Y 65,78,82,92,90,97,100
Also estimate Y when X=35
- b) In a sample of 1000 cases, the mean of certain test is 14 and standard deviation is 2.5. Assuming the distribution to be normal, find (7M)
- i) How many students score between 12 and 15?
 - ii) How many score above 18?
 - iii) How many score below 18?