

## **QUESTION BANK**

**SUBJECT NAME: PROGRAMMING IN R**

**SUBJECT CODE: UACC5001**

### **UNIT – I      R - FUNDAMENTALS**

#### **PART – A**

1. Who invented R Programming?
2. When was R Programming Language invented?
3. Why was R Programming Created?
4. Why R is called R?
5. What is meant by R Programming?
6. Who uses R?
7. What does in R mean?
8. Write any four Math Functions in R.
9. List the difference between Vector and List.
10. Define Lists.
11. What is meant by Matrices in R?
12. Define Arrays in R.
13. Differentiate between Array and Vector.
14. Write R-Code to Lazy Evaluation of Functions.
15. Calculate the Cumulative Sum and Cumulative Product for the given data using R-Code 23, 1, 7, -2, 8, 10 and 17.
16. Find the Maximum and Minimum for R-Code: 14, 23, 16,20,0, -17, 100, 6.
17. What is Batch Mode?
18. What is Data Frame?
19. Write about Vectors in R.
20. What is meant by Default Value for arguments?

#### **PART – B**

1. What are the different modes of working with R?
2. What are programming features of R?
3. What are some advantages of R?
4. What are the disadvantages of R?
5. What is a Vector in R? Explain operations on Vectors.
6. What is a List? Explain the Concept of Lists in R with examples.

7. Explain in detail about Data Frame and Arrays with example in R-Code.
8. What are the different forms of Data Types and how to test the data type in R? Give on example for each.
9. Explain R as Calculator using basic operations and built-in functions with suitable example.
10. Write any four Math Functions with suitable examples in R-Code.
11. How to Pass Default Values for arguments in R.
12. Write R-Code to Lazy Evaluation of functions.
13. Explain how to access list elements in R?
14. Explain in detail about Variables with suitable examples in R-Code.
15. Explain different Advanced Data Structures in R.
16. Explain different types of Operators in R.
17. Explain R Sessions in detail.
18. Write an R Script, Using with mathematical functions on console in objects.
19. Write an R Script, Using without mathematical functions on console in objects.
20. Write an R Script, to create objects for calculator application and save in a specified location in disk.

### **PART – C**

1. Explain in detail about Basic Mathematical Operators with examples in R-Code.
2. Elaborate the following R Objects: a) Vector b) Data Frame c) Matrices d) List.
3. Identify the different ways to access the R objects. List the different data types in R with suitable examples.
4. Explain R Sessions and Functions in detail.
5. What are the different forms of Vectors and how to test the Vectors in R? Give on example for each.
6. Identify the different ways in Matrices to access the R Objects. List the different types of Arrays in R with suitable examples.
7. What are the data structures in R that is used to perform statistical analyses and create graph?

## **UNIT-II**      **R CONTROLS AND FUNCTIONS**

### **PART – A**

1. What are the three types of loops available in R?
2. What is use of if-else statement in R?
3. Give the syntax for loop in R.
4. Define Break and Next statement in R.
5. Mention the use of lapply () function.
6. What is a vector in R Programming?
7. Write syntax of if else in R.
8. Define recursive function.
9. Define binary search tree.
10. Define a function and mention its uses.
11. What is meant by default value for arguments?
12. Write syntax of next statement.
13. Differentiate between While and Repeat Statement.

### **PART – B**

1. Draw the flow chart for the for loop and print the numbers from 1 to 10 using for loop.
2. Write a R program to find a square for the given vector x->c (5, 12, 13).
3. Discuss about while statement with suitable example.
4. Define Repeat statement and discuss with suitable examples.
5. Write a note and draw the flow chart for the following Statement:  
a) Break b) Next
6. Discuss about Looping Over Non-Vector Sets.
7. What are return values? Give an example for return values.
8. Write short notes on No Pointers in R.
9. Write R Code for Quick Sort.
10. Write R Code for Recursion.
11. Explain Functions are Objects in R.
12. Write R Code to return complex object.
13. Describe Default Values for Arguments with suitable example in R.
14. Write R-Code to find greatest among three numbers.

15. Write R-Code to find greater between two numbers.
16. Write R-Code to check prime number.
17. Write R-Code to print factorial of a number.
18. Write R-Code to print sum of digits.
19. Write R-Code to reverse a given number.
20. Write R-Code to check palindrome number.

### **PART - C**

1. Explain Loops in Control Statements with examples in R.
2. What are the different forms of return values and how to test the return values in R?  
Give on example for each.
3. Explain in Conditional Statements with examples in R.
4. Write about apply method in R? Write about lapply (), sapply () with suitable examples.
5. Describe Arithmetic and Boolean Operators and Values with suitable examples in R.
6. Explain Binary Search Tree Implementation using R.

### **UNIT-III**      **R MATH AND SIMULATION**

#### **PART – A**

1. Differentiate between Solve () and Sweep () function.
2. Define Calculus in R.
3. Write syntax of rewinding a file.
4. What is meant by cat () function?
5. What is use of print () function?
6. Mention the use of scan () function.
7. What are the four types of Math functions available in R?
8. Differentiate between readline () and readlines () function.
9. What are the different types of writing data to a file available in R?
10. Compare readlines () and read.table () function.
11. Define Sorting.
12. What is rank () function?
13. How to use order () function in R?
14. Explain which.min () and which.max () function.
15. Explain crossprod () function.

#### **PART – B**

1. Write R-Code Cumulative Sums and Cumulative Products.
2. Explain Calculating a Probability implementation in detail.
3. Explain different types of Math functions in R.
4. Explain Finding Stationary Distribution of Markov Chains Implementation using R.
5. Describe the Sorting functions with suitable examples in R.
6. Write short notes on Minima and Maxima in R.
7. Explain Vector Cross Product Implementation using R.
8. Write short notes on Accessing the Keyboard in R.
9. How many ways are there to read and write files?
10. Explain an extended example of Connections.
11. How to read data from the Keyboard?
12. Explain how to write files?

### **PART – C**

1. What are the different forms of doing Math and Simulation in R. List the different types of Math with suitable examples in for each?
2. Explain Functions for Statistical Distribution in R.
3. Describe Linear Algebra Operation on Vectors and Matrices with suitable examples in R.
4. Explain in detail about Set Operations with suitable examples in R.
5. Briefly Discuss about Accessing the Keyboard and Monitor with examples in R.
6. Mention how you can read and writing files with suitable examples in R.

## **UNIT – IV    R - GRAPHICS**

### **PART – A**

1. Write about Lines () function.
2. Write about Polygon () function.
3. Define Graphics.
4. Define Plot () function.
5. What is x11() function?
6. Write R Script to create a Line Graph.
7. What are all arguments used in Plot () function?
8. Write a syntax in barplot () function.
9. Write a syntax in boxplot () function.
10. Give the syntax for creating Scatter Plot matrices.
11. Define Rainbow () function.
12. What is heat.colors () function?
13. Write cm.colors () function in R.
14. Define Histogram () function.
15. Write a syntax in Pie Chart () function.
16. What is cex () function?
17. Compare text () and legend () function.
18. What is meant by point () function?
19. How to use xlim and ylim options in plot () function?
20. Which function is used to create a boxplot graph in R?

### **PART – B**

1. Write about Scatter Plot and Histograms with examples? Explain its importance.
2. How to Plot multiple curves in same graph? Explain with examples.
3. Differentiate between Barplot () and Boxplot () function.
4. Explain Histogram () function in R with suitable examples.
5. Write short notes on Strip-Chart () function in R.
6. Explain Pie-Chart () function in R with suitable examples.
7. Explain in Bar-Plot () function in R.
8. Discuss in Box-Plot () function in w with suitable examples.
9. How to save a graph in R?
10. How to specifying through the Hexa-Decimal Values in R.

11. Explain in detail about Color Palette with suitable examples in R.
12. What is Box Plot? Explain importance of boxplot with example.
13. Draw a Pie-Chart for the following data:

Section	I	II	III	IV	V
No. of Workers:	220	37	190	70	250

### **PART – C**

1. Elaborate the following R Objects: a) Points () b) Legend () C) Text () d) Locator ()
2. Identify the different ways to access R base graphics. List the different types of Plots function in R with suitable examples.
3. Explain in detail about Saving Graphs to Files with suitable examples in R.
4. Explain R – Colors in detail.
5. Elaborate the following R objects: a) Bar-Plot () b) Box-Plot () c) Pie-Chart () d) Strip-Chart ().
6. Describe Customizing graphs with suitable examples in R.
7. Explain R Graphics Devices.



## **UNIT – V**     **R – STATISTICS**

### **PART – A**

1. Define Statistics.
2. Define Normal Distribution.
3. What is meant by Linear Regression?
4. How R is used in Linear Models?
5. X is the Vector C (5, 9.2, 3, 8.5,1, NA), what is the output of mean(X)?
6. Define ANOVA.
7. What are R Spines?
8. Write about Decision in R.
9. How to used Covariance in R?
10. Write about Logistic Regression in R.
11. Define Multiple Regressions.
12. Explain dnorm () function.
13. Write about Binomial Distribution.
14. Write about Poisson distribution.
15. What is the Probability Distribution in R?
16. How R is used in Logistic Regression?

### **PART – B**

1. Mention how you can produce Correlations and Covariance in R.
2. Explain about Logistic Regression in R.
3. How do you get the Standard Deviation for a Vector x?
4. Explain Binomial Distribution in R.
5. Describe Simple Linear Regression in R.
6. How R is used Poisson Regression with suitable examples.
7. Explain Survival Analysis in R.
8. Explain Normal Distribution in R.
9. Write short notes on Non-Linear Models in R.
10. Explain Poisson distribution in R.
11. Find median and mode of following numbers: 12,13,11,0,9,11,7,11,10,15,16,11.
12. What is Linear Regression in R Programming Language?

## **PART – C**

1. Elaborate the following R Objects: a) Mean b) Median C) Mode d) Variance e) Standard Deviation
2. Calculate the Coefficient of Correlation to the following data:

X	10	12	18	24	23	27
Y	13	18	12	25	30	10
3. Explain in detail about other distributions in R.
4. Discuss about Multiple Regression Generalized Linear Models with suitable examples in R.
5. Explain how to other generalized Linear Models in R.
6. Calculate the Measuring the Central Tendency to the following data:  
3,3,5,6,7,7,8,1,1,1,4,5,6.
7. Compute the Correlation Coefficient for the following data:

X	68	64	75	50	64	80	75	40	55	64
Y	62	58	68	45	81	60	68	48	58	70
8. Find Covariance for following data set:  $x = \{2,5,6,8,9\}$  and  $y = \{4,3,7,5,6\}$ .
9. Using the Covariance formula, find covariance for the following data set:  $x = \{5,6,8,11,4,6\}$  and  $y = \{1,4,3,7,9,12\}$ .