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Reg No.: \_\_\_\_\_

Name: \_\_\_\_\_

**APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY**  
B.Tech Degree S6 (S, FE) Examination January 2024 (2019 Scheme)

**Course Code: AIT362**

**Course Name: PROGRAMMING IN R**

Max. Marks: 100

Duration: 3 Hours

**PART A**

*Answer all questions, each carries 3 marks.*

Marks

- |    |   |     |
|----|---|-----|
| 1  | Write an R program to add 3 to each element in a given vector. Print the original and new vector. | (3) |
| 2  | List at least three special values in R?  | (3) |
| 3  | How to use sort functions in R?   | (3) |
| 4  | Explain how to import data from external files in R?  | (3) |
| 5  | Write any three functions available for binning numeric data in R.                                | (3) |
| 6  | What are Common Distribution-Type Arguments?  | (3) |
| 7  | How is correlation and covariance done in R?  | (3) |
| 8  | Write the function and arguments for implementing PCA.  | (3) |
| 9  | What do you mean by non-linear least squares?   | (3) |
| 10 | Write details about the lm function in R.   | (3) |

**PART B**

*Answer one question from each module, each carries 14 marks.*

**Module I**

- |    |  |     |
|----|--|-----|
| 11 | a) Write an R program to print the Fibonacci sequence.                               | (7) |
|    | b) Write an R program to find whether the inputted string forms a palindrome or not. | (7) |

**OR**

- |    |  |     |
|----|--|-----|
| 12 | a) Write an R program to check if a given number is prime or not.        | (7) |
|    | b) Write an R program to extract first two rows from a given data frame. | (7) |

**Module II**

- |    |  |     |
|----|--|-----|
| 13 | a) Write an R program to write the following data to a CSV file. | (7) |
|----|--|-----|

Date	HomeTeam	Result	AwayTeam
Fri Jul 20 2018	Brentford	02:00	Arsenal
Fri Jul 20 2018	Burnley	01:02	Brighton and Hove Albion
Sat Jul 21 2018	Chelsea	03:00	Crystal Palace
Sat Jul 21 2018	Everton	03:01	Southampton
Sat Jul 21 2018	Leicester City	01:00	Wolverhampton Wanderers
Sat Jul 21 2018	Manchester United	05:01	Leeds United
Sun Jul 22 2018	Norwich City	00:03	Liverpool
Sun Jul 22 2018	Watford	03:02	Aston Villa
Sun Jul 22 2018	Newcastle United	02:04	West Ham United
Fri Jul 27 2018	Tottenham Hotspur	01:00	Manchester City
Fri Jul 27 2018	Aston Villa	02:00	Newcastle United
Sat Jul 28 2018	Brighton and Hove	02:00	Watford

- b) Explain how data cleaning is done in R. (7)

**OR**

- 14 a) Given a file "movies.csv" of movies data with the fields Film, Genre, Lead Actor, Lead Actress, Producer, Director, Studio, Audience Score, Profitability, and Year. Write an R program to print total profitability of all movies for a specific year. Find the maximum profitability movie in each year. (7)
- b) How is missing data handled in R? (7)

**Module III**

- 15 a) Explain any two non-parametric tests in R. (7)
- b) Write an R program to display the probability distribution table for number of successes from a binomial distribution where number of observations is 10 and probability of success in each trial is 0.5 (7)

**OR**

- 16 a) Write an R program to fit a Poisson distribution with the following data: (7)

Height	3	4	5	6	7	8
Weight	30	45	50	55	65	75

- b) Explain in detail about probability distributions with suitable examples. (7)

**Module IV**

- 17 a) Given the sales information of a company as CSV file with the following fields: year, no\_month, grocery, crockery, detergent, shampoo, moisturizer, (7)



total\_units, total\_profit. Write R codes to calculate and visualize the total sale data for last year for each product and show it using a Pie chart.

- b) Explain different plots in R with examples. (7)

OR

- 18 a) Write an R program to plot the rating of any ten movies using pie chart. (7)

- b) How do you customize Lattice Graphics? (7)

Module V

- 19 a) What are generalized linear models? (7)

- b) Explain how to build linear models in R? (7)

OR

- 20 a) Write an R program to illustrate the steps to predict the price of a car using linear regression for the data given below. (9)

Car Age (in years)	4	4	5	5	5	7	7	8	10
Price (in dollars)	6200	6000	5800	4800	4700	4500	4300	3600	2000

- b) Explain Poisson regression in R. (5)

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