Reg No.:_____ Name:_____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

B.Tech Degree S6 (S,FE) Examination December 2025 (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		Explain the concept of factors in R with an example.	(3)
2		Write an R program to find the sum of all elements in a vector.	(3)
3		Explain the concept of data reshaping in R with an example.	(3)
4		What are different methods for handling missing values in R?	(3)
5		Define normal distribution in R.	(3)
6		Explain the purpose of hypothesis testing in R.	(3)
7		Explain graphical parameters in R and their significance in data visualization.	(3)
8		Compare and contrast the base graphics and ggplot2 in R.	(3)
9		Explain the logistic regression function.	(3)
10		Explain the concept of analysing the fit.	(3)

PART B

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

Module I

11	a)	Explain with example the controlling statements repeat-break statement and return statement in R.	(7)
	b)	Write an R program to find the Nth highest value of a vector.	(7)

OR

12	a)	Write an R program to create two data frames with the given sample data. Perform the following operations:	(7)

Data Frame 1 (df1)

Student_ID	Name	Course
201	Alice	Math
202	Bob	Science
203	Charlie	English

Data Frame 2 (df2)

Student_ID	Name	Grade
204	David	A
205	Emma	B
206	Frank	A

i) Add a new row to df1 with the following data:
Student_ID: 207
Name: Grace
Course: History
ii) Add a new column to df2 named "Age" with the following values:

David: 20
Emma: 22
Frank: 21
iii) Merge both data frames into a single data frame and display the result.

Perform the specified operations and show the updated data frames.

b) Write an R program to perform the following matrix operations: (7)
i) Create two 3×3 matrices with sample data.
ii) Extract the second row and third column from the first matrix.
Perform the specified operations and show the expected output

Module II

13 a) What is binning, and what are the different functions used for binning data. (7)

b) Explain any four summarizing functions in R with appropriate example programs (7)

OR

14 a) Dealing with missing values is an important part of data preprocessing and analysis in R. How we could find the missing values in R, what is its importance and how we could handle the missing data in R (7)

b) Explain sorting in R programming. With suitable example explain how sorting is done in data frame. (7)

Module III

15 a) Discuss the various summary statistics functions in R. (7)

b) Explain power test and different types of power test in R. (7)

OR

16 a) Describe the applications of the Chi-square test and perform it in R. (7)

b) Explain different non-parametric test in R. (7)

Module IV

17 a) Explain Lattice Graphics in R, its working mechanism, and provide a suitable programming example. (7)

b) Write an R program to create a barplot for a given dataset. (7)

OR

18 a) Discuss the importance of ggplot2. (7)

b) Write a R program and explain how to create a Pie Chart. (7)

Module V

19 a) Explain the Ridge and Lasso regression techniques in R. (7)

b) Discuss refining a model in detail (7)

OR

20 a) Write an R program to perform **linear regression** on the given data: (7)

x	**12**	**19**	**23**	**30**	**38**	**45**	**50**	**60**	**72**
y	280	340	400	420	380	460	500	530	600

b) Compare the performance of logistic regression and linear regression in R. (7)

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