MATHEMATICAL SOFTWARE I

List of practicals

1. Use R as a calculator using basic commands in R
2. Data entry, manipulation and retrieval
3. Creating frequency and relative frequency distribution in R
4. Creating data frame, matrices
5. Descriptive statistics, Graphics - pie diagram, box plot, histogram, bar plot
6. Creating functions
7. To find mean, median, geometric mean, harmonic mean of numerical data and edit the output
8. To determine standard deviation, variance and checking the consistency of the given data and edit the output
9. Bivariate data- scatter plot, correlation co-efficient, fitting linear regression line and interpreting the result
10. Multiple linear regression models
11. Computation of probabilities in various distributions.(Binomial, Poisson, Normal)
12. Drawing the graph of probability mass and density functions
13. One and two sample 't' test and paired' t test
14. One way and two way Analysis of Variance tests

Reference Books

Sl.No.	Author Name	Title of the Book	Publisher	Year and Edition
1	W. John Braun and Duncan J. Murdoch	A First Course in Statistical Programming with R	Cambridge University Press, Newyork	2007
2	J H Maindonald	Using R for Data Analysis and Graphics: Introduction, Code and Commentary	https://cran.r-project.org/doc/contrib/usingR.pdf	2008
3	Kim Seefeld and Ernst Linder	Statistics using R with Biological Examples	https://cran.r-project.org/doc/contrib/Seefeld_StatsRBio.pdf	online

MATHEMATICAL SOFTWARE II

List of Practicals

1. Use SageMath as a calculator – A Financial Example
2. Use Sage for Trigonometry
3. Use Sage to Graph 2-Dimensionally
4. Superimposing Multiple Graphs in One Plot
5. Making Own Functions and Plotting in Sage
6. Solving Linear and Non-Linear Systems of Equations
7. Use Sage as a Numerical Solver
8. Use Sage to find Derivatives & Plot f (x) and f '(x) Together and find Higher-Order Derivatives
9. Use Sage to Calculate Integrals
10. Labeling the Axes of Graphs
11. Graphing an Integral
12. Parametric 2D Plotting
13. Vector Field Plots, Gradients and Vector Field Plots
14. Working with the Integers and Number Theory
15. Combinations and Permutations

Text Book

S.No.	Author Name	Title of the Book	Publisher	Year and Edition
1	Gregory V. Bard	Sage for Undergraduates	online version	--