MODULE 1

(2 Mark Questions)

1. Who invented R Program. The file extension of R program?
2. **What is Operator? Explain Arithmetic operator in R.**
3. Define vectors.
4. What is plotting?
5. **What is coercion in R?**
6. What is a data frame?
7. What are all the special values in R?
8. What is data frame with syntax?

(6 Mark Questions)

1. Define Data frame with syntax. To create a data frame name "Student information" data frame fields are Name, Age, Class Mobile Number filled with at least five data fields.
2. What are all the data structures in R programming?
3. **What are all the data types in R programming?**
4. To implement calculator program using arithmetic operators and switch statement in R.
5. What is class? Explain S3,S4,S5 class (reference class) with syntax and example.
6. Explain Basic Plotting with example.
7. **Explain in detail Array data structures and Matrix data structures syntax with examples.**
8. What is the difference between list and vectors?

(10 Mark Questions)

1. **Explain the features and Application of R programming.**
2. **Explain Types Data structures in Detail.**
3. Define variable, constant, data types.
4. Explain the data frames in R with a suitable example.
5. **Explain the different types of plotting.**
6. Differentiate between single and multidimensional arrays with an example of each.

MODULE 2

(2 Mark Question)

1. What are all the coding loops using in R?
2. What is function with syntax?
3. What is global and local variable?
4. Explain types of reading and writing files.

(6 Mark Question)

1. Explain the conditional statements with example program.
2. **Explain coercion with example program.**
3. Explain the package in R with a suitable example.
4. Write a R program how to take the input from the user using readline() function that includes NAME, AGE CLASS, SECTION, COURSE, UUCMS NUMBER.
5. **What is Function. Explain function declaration and function call in program.**
6. **Explain difference between Conditional statements and loops in R.**
7. What is recursive function? To write a R program take the input from the user to find factorial of given number using recursive function.
8. **Explain Control flow mechanism 1)Break 2)next 3)repeat statements with example**
9. **What is exception? To implement R program using function with try, catch, finally exception handling.**
10. **Explain the concept of reading and writing files in R.**
11. **Explain the different input and output statements in R.**
12. Differentiate between while loop and repeat loop.
13. Differentiate between try() and tryCatch() statements.
14. **Explain Time and Visibility/progress bar with example.**

(10 Mark Question)

1. What is function explain types of functions. To build one R program - Largest of three numbers using function.
2. **Define class and object. Explain class and types with example program**.
3. **Explain Exception Handling with syntax and example program.**

MODULE 3

(2 Mark Questions)

1. **What is probability? Give examples.**
2. **What is Probability density function?**
3. What is statistical computing?
4. **Expand PDF and PMF.**
5. **State Uniform Distribution.**
6. **What are Probability Density Functions?**
7. **What is probability Mass function?**

(6 Mark Questions)

1. What is statistical computing. Explain Types of statistics.
2. What is probability distribution? Mention its types
3. What is random variable? Explain types of random variable.
4. **Explain Student's t distribution.**
5. **Explain Normal distribution and Standard Normal Distribution.**
6. **Explain Binomial distribution.**
7. **Explain Poisson distribution.**
8. **Explain Bernoulli distribution.**
9. Explain Probability density function with three distributions.
10. List the applications of probability mass functions
11. Write the applications of Student's T Distribution.
12. Define data visualization. Explain pie charts, Bar charts, Histogram with examples.
13. Explain all probability distribution built-in functions.
14. **Compare/Differentiate PMF and PDF in detail.**

(10 Mark Questions)

1. Write a R program To find mean median, variance range and standard deviation using function.
2. **Find mean, median, mode, variance, standard deviation and range for the given values: 12,17,18,11,9,4,21,19,18,12,18**
3. Write a detailed note on normal distribution and its properties.
4. Discuss about the Binomial distribution in detail.
5. **Elucidate Probability distribution in detail.**

MODULE 4

(2 Mark Questions)

1. What is sampling distributions?
2. **Define Hypothesis test.**
3. **What are Type I and Type II errors?**
4. What is P-value?
5. **Explain Central Limit Theorem.**
6. **What is ANOVA?**
7. **What are the types of ANOVA technique?**
8. Explain errors and power.
9. **What are all the components of hypothesis test?**
10. Expand ANOVA.

(6 Mark Questions)

1. Explain sampling distribution. Distribution for a sample mean.
2. What are all the confidence intervals?
3. Explain testing proportions.
4. Explain one way ANOVA with example.
5. How is significance level useful in hypothesis testing?
6. **Explain Z-test?**
7. What is Statistical power? How is it related to error?
8. **Differentiate between Type I and Type II errors.**
9. **Define the terms mean and proportion.**

(10 Mark Questions)

1. **Briefly explain components of hypothesis test.**
2. **Explain ANOVA and its types.**
3. **Write in detail about hypothesis testing and its components.**
4. **Explain the statistical power and its components.**

MODULE 5

(2 Mark Questions)

1. **What is 3D scatter plot?**
2. Define plot in graphics.
3. **What is linear regression?**
4. **What is meant by the Goodness-of-Fit measure?**
5. **Define multiple linear regression.**
6. **What is dependent variable and independent variable.**

(6 Mark Questions)

1. **Define simple linear regression with example.**
2. **Discuss specialized text and label notation.**
3. **What are the steps involved in linear model selection?**
4. Define colors for plots. Discuss with examples.
5. **Differentiate between simple linear regression and multiple linear Regression.**

(10 Mark Questions)

1. Explain 3D scatter plot in details
2. **Define colors for plots. Discuss with examples.**
3. **List out various specialized text and label notations for plot. Explain in detail with examples.**
4. **Linear Regression Problem to solve:**

X axis	Y axis
34	102
35	109
39	137
42	148
43	150
47	158