DEPARTMENT OF BIOTECHNOLOGY
KUMARAGURU COLLEGE OF TECHNOLOGY

U18BTI6204L: BIOLOGICAL DATA ANALYSIS **Academic Year:2024-25**

A1- **R-BASICS**

Instructor: Dr. Ram K *Scribes: R18-BBT3*

1. (2 points) Write an R program to assign the value 42 to a variable and print it.
2. (2 points) Create a vector of numbers from 1 to 10 and find the sum of all elements in the vector.
3. (2 points) Write an R script to check whether a given number `x = 15` is even or odd.
4. (2 points) Generate a sequence of numbers from 5 to 50 with an interval of 5 using R.
5. (2 points) Write an R code to create a 3x3 matrix with numbers from 1 to 9 and display it.
6. (2 points) Extract the second column of the following data frame:
   `df <- data.frame(Name = c("A", "B", "C"), Age = c(20, 22, 21), Score = c(85, 90, 88))`.
7. (2 points) Using R, create a vector containing `5, 10, 15, 20` and multiply each element by 2.
8. (2 points) Write a function in R to calculate the cube of a given number.
9. (2 points) Create a factor variable for the following data: `c("Red", "Blue", "Green", "Red", "Blue")`.
10. (2 points) Write an R code to install and load the `ggplot2` package.
11. (2 points) Write an R script to find the mean, median, and standard deviation of the numbers in the vector `v = c(12, 15, 20, 22, 25)`.
12. (2 points) Create a list in R containing a vector, a matrix, and a data frame. Write code to extract the matrix from the list.
13. (2 points) Write an R program to generate 100 random numbers from a normal distribution with a mean of 50 and a standard deviation of 10. Plot a histogram of the generated data.
14. (2 points) Write an R script to create a data frame with columns `Student`, `Subject`, and `Marks`. Add data for 5 students and display the data frame.
15. (2 points) Using the `subset()` function, filter rows from the following data frame where `Marks > 80`:
    `df <- data.frame(Name = c("John", "Mary", "Sam"), Marks = c(75, 85, 90))`.
16. (2 points) Create a matrix of order 4x4 with numbers from 1 to 16. Write R code to calculate the sum of each row and each column.
17. (points) Write an R program to read a CSV file containing student marks in different subjects (e.g., Math, Science, English). Perform the following operations:
    (a) (3 points) Load the CSV file into a data frame.
    (b) (3 points) Find the average marks for each student.
    (c) (3 points) Plot a bar chart showing the marks of each student in different subjects.
18. (points) Simulate rolling two six-sided dice 1000 times in R. Write code to:
    (a) (3 points) Generate the sum of outcomes for each roll.
    (b) (3 points) Count the frequency of each possible sum (from 2 to 12).
    (c) (3 points) Plot the frequencies using a bar chart.

Run LaTeX again to produce the table

Course Coordinator

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