Chhattisgarh Swami Vivekananda Technical University, Bhilai (C.G.)

Branch: B Tech Honours (Artificial Intelligence)   **Semester: IV**

Subject: R for Data Science Lab   **Subject Code: B127493(022)**

Maximum Marks in ESE: 40

UNIT– I:
Practical Component:

1. Develop the R program for Basic Mathematical computation –Square, Square root, exponential etc.

2. Create an object X that stores the value then overwrite the object in by itself divided by Y. Print the result to the console.

3. Create and store a sequence of values from x to y that progresses in steps of 0.3.

4. Overwrite the existing object using the same sequence with the order reversed.

5. Confirm that the length of the vector created is 20.

6. Extract the first and last elements of already created vector from, storing them as a new object.

UNIT– II:
Practical Component:

1. Create and store a three-dimensional array with six layers of a 4 X 2 matrix, filled with a decreasing sequence of values between 4.8 and 0.1 of the appropriate length.

2. Extract and store as a new object the fourth- and first-row elements, in that order, of the second column only of all layers of (1).

3. Use a fourfold repetition of the second row of the matrix formed in (2) to fill a new array of dimensions 2 X 2 X 2 X.

4. Create a new array comprised of the results of deleting the sixth layer of (1).

6. Overwrite the second and fourth row elements of the second column of layers 1, 3 and 5 of (4) with -99.

UNIT– III:
Practical Component:

1. Confirm the specific locations of elements equal to 0 in the 10 X 10 identity matrix I10

2. Store this vector of 10 values: foo <- c(7,5,6,1,2,10,8,3,8,2).Then, do the following:
   i. Extract the elements greater than or equal to 5, storing the result as bar.
   ii. Display the vector containing those elements from foo that remain after omitting all elements that are greater than or equal to 5.

3. Store the string "Two 6-packs for $12.99". Then do the following:
   i. Use a check for equality to confirm that the substring beginning with character 5 and ending with character 10 is "6-pack".
   ii. Make it a better deal by changing the price to $10.99.

4. Create a factor with levels of confidence as follows: Low for percentages [0,30]; Moderate for Percentages (30, 70]; and High for percentages (70,100].

UNIT– IV:
Practical Component:
1. Create a list that contains, in this order, a sequence of 20 evenly spaced numbers between -4 and 4; a 3 X 3 matrix of the logical vector c(F,T,T,T,F,T,T,F,F) filled column-wise; a character vector with the two strings "don" and "quixote"; and a factor vector containing the observations c("LOW","MED","LOW","MED","MED","HIGH"). Then, Extract row elements 2 and 1 of columns 2 and 3, in that order, of the logical matrix.

2. Create and store this data frame as d frame with the fiiels of person, sex, funny in your R work space. Append the two new records.

3. Write a single line of code that will extract from my data frame just the names and ages of any records where the individual is female and has a level of funniness equal to Med OR High.

4. Use your knowledge of handling character strings in R to extract all records from my data frame that correspond to people whose names start with *S*.

UNIT– V:
Practical Component:
1. Create a database with the fields of weight,height and sex then create a plot of weight on the x-axis and height on the y-axis. Use different point characters or colors to distinguish between males and females and provide a matching legend. Label the axes and give the plot a title.

2. create a plot using ggplot2 for the same database consists of weight on the x-axis and height on the y- axis. Use different point characters or colors to distinguish between males and females and provide a matching legend. Label the axes and give the plot a title.

3. Write R code that will plot education on the x-axis and income on the y-axis, with both x- and y-axis limits fixed to be [0;100]. Provide appropriate axis labels. For jobs with a prestige value of less than or equal to 80, use a black * as the point character. For jobs with prestige greater than 80, use a blue @.