**MANAV RACHNA UNIVERSITY, FARIDABAD**

**Department of Computer Science & Technology**

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| **Course: B. Tech** | **Semester: VI** |
|  | **Subject: R Programming** |
| **BT Level Covered: BT1, BT2, BT3**  **BT1- Knowledge; BT2-Comprehension; BT3-Applications** |  |
| **Course Outcome (CO): CO1**  **CO1:** Define the basics of R programming concepts and Business Analytics |  |

**Lab/Workshop: 3**

**Lab:** Introduction to operators, loops, decision making, matrices, classes & objects, data frames.

**Operators & LOOPS**

1. Create Two vectors. Apply following operations:

V<-c(2,3,4,5,6)

T<-c(5,6,7,8,9)

a) Arithmetic; b) Relational; c) Logical

2. Write code in R to find greatest of two numbers

3. WAP to find factorial of a number

4. WAP to demonstrate the use of switch in R

5. WAP for fibonacci series using while loop in R

6. Create a function to print squares of numbers in sequence.

**Matrices**

1. Create the following two matrices and do the indicated matrix multiplication.

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1. Suppose
   1. Check that A3 = 0 where 0 is a 3\* 3 matrix with every entry equal to 0.
   2. Replace the third column of A by the sum of the second and third columns.

A=(1,1,3,5,2,6,-2,-1-3)

1. Create the following matrix B with 15 rows:

B=(10,-10,10,10,-10,10………….)

Calculate the 3 \*3 matrix BTB. (Look at the help for crossprod.)

1. Create a 6\*6 matrix matE with every entry equal to 0. Check what the functions row and col return when applied to matE. Hence create the 6\*6 matrix:

(0,1,0,0,0,0,1,0,1,0,0,0,0,1,0,1,0,0,0,0,1,0,1,0,0,0,0,0,1,0)

**List, Arrays & Data Frames**

1. Create a list containing strings, numbers, vectors and a logical value.
2. Create a list containing a vector, a matrix and a list and give names to the elements in the list.
3. Create two lists.

list1 <- list(1,2,3)

list2 <- list("Sun","Mon","Tue")

Merge above two lists

1. Create list and write function to convert into vector
2. Create two vectors of different length. Take these vectors as input to the array.
3. Create a vector as input.

Data<c("East","West","East","North","North","East","West","West","West","East","North") Apply factor function and apply the factor function with required order of the level.

7. Create a data frame of employee having name,id,salarydepartment.Display the structure and

summary of Data frame. Extract specified data from data frame and add Row and coloumbs in

data frame.