PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

BSc DEGREE EXAMINATION DECEMBER 2024
(Fourth Semester)

Branch – **COMPUTER SCIENCE WITH DATA ANALYTICS**

R PROGRAMMING FOR DATA ANALYSIS

Time: Three Hours Maximum: 50 Marks

SECTION-A (5 Marks)
Answer **ALL** questions
ALL questions carry **EQUAL** marks (5 x 1 = 5)

1. What type of object is created by the matrix() function?
   (i) A list (ii) A data frame
   (iii) A matrix (iv) A vector

2. Which function is used to read a CSV file into R?
   (i) read.csv() (ii) read.table()
   (iii) read.xlsx() (iv) read.delim()

3. What function in R is used to convert a character string to a Date object?
   (i) as.Date() (ii) as.POSIXct()
   (iii) strptime() (iv) as.DateTime()

4. What is the output of the following code?

```
x <- 1:3
for (i in x) {
print(i * 2)
}
```

   i. 1 2 3 4
   ii. 1 2 3
   iii. 2 3 4
   iv. 1 2 3 4 5

5. ____prints out the function call stack after an error occurs
   i) traceback() (ii) debug()
   (iii) browser() (iv) recover()

SECTION - B (15 Marks)
Answer **ALL** Questions
ALL Questions Carry **EQUAL** Marks (5 x 3 = 15)

6 a Explain five basic features of R programming language.

(or)

b Explain the concept of a data frame in R, including its structure and components.

7 a What does read table in R do?

(or)

b Explain the purpose of binary file formats in R and name two functions used to read and write binary files in R.

8 a What is matrix sub setting in R?

(or)

b What is the function of the DataFrame?

Cont...

9 a Explain the basic structure of a while loop in R.

(or)

b How to create a likelihood function in R?

10 a How to split DataFrame in R?

(or)

b What is random sampling in R?

SECTION -C (30 Marks)

Answer **ALL** questions

ALL questions carry **EQUAL** Mark (5 x 6 = 30)

11 a Explain the different types of objects in R and provide examples of each.

(or)

b Explain a list in R and how it differs from vectors. Write an R code to create a list that contains a numeric vector, a character vector, and a logical value.

12 a Explain the methods for reading and writing data in R. Provide examples of how to

1. Read a CSV file into a data frame in R.
2. Write a data frame to a CSV file.
3. Read an Excel file into R and write the data frame back into an Excel file.
4. Save and load an R object using saveRDS() and readRDS() functions.

(or)

b. Explain the purpose and use of the dput() and dump() functions in R.

13 a How to subset elements of a list in R? How do you access nested list elements in R?

(or)

b What is the dplyr package in R? Which are 5 of the most commonly used dplyr functions?

14 a Write an R script using nested for loops to perform to transpose the matrix and print the transposed matrix.

(or)

b. Scoping rules in R programming. Explain in detail.

15 a Looping on the Command Line . Explain the functions which implement looping with examples.

(or)

b Explain the debugging tools in R programming using traceback(),debug() and recover().

Z-Z-Z END