

1029

8

```
print(x^2)
}
f(x) + 1
} (3)
```

(600)

(13/5/2022 Mor)

[This question paper contains 8 printed pages.]

Your Roll No.....

Sr. No. of Question Paper : 1029 A
Unique Paper Code : 32343408
Name of the Paper : Introduction to R Programming (SEC)
Name of the Course : B.Sc. (H) Computer Science
Semester : IV
Duration : 2 Hours Maximum Marks : 25

Instructions for Candidates

1. Write your Roll No. on the top immediately on receipt of this question paper.
2. All parts of Question 1 (Part A) are compulsory.
3. Attempt any **three** questions from **Part B**.
4. All questions in **Part B** carry equal marks.

PART A

1. Answer the following questions :
(a) What value will be stored in variable "X"?

X <- vector("complex", 3) (1)

P.T.O.

(b) Write R statement to extract the rows from a data frame "df" that does not have missing values. (1)

(c) Write the output for statements 1 and 2 in the following R script.

```
y <- c(2, 1, 5, 7, 8, 3, 2, 4, 5)
```

```
length(y) <- 4
```

```
print(y)           #statement 1
```

```
length(y) <- 6
```

```
print(y)           #statement 2 (2)
```

(d) For the given factor `f <- factor(c("abc", "abc", "cab", "bac", "abc", "cab", "cab"))`, what will `table(f)` return? (2)

(e) What are the two compulsory files in a package directory structure? (2)

(f) What is the difference between the functions "read.csv" and "read.csv2"? (2)

(ii) Display the tasks that are jointly performed by P1 and P2.

(iii) Give a suitable plot to show the frequency of each task performed by P1 and P2. Give appropriate labels and legends. (5)

7 (a) Write R script to read a file "my_file.txt":

(i) headers as in input file,

(ii) separator as new line character,

(iii) indicate blank rows as missing values,

(iv) quoting strings as ' '. (2)

(b) What will be the output of 'f(5)'? Function 'f' is defined as follows :

```
f <- function(x)
```

```
{
```

```
  f <- function(x)
```

```
{
```

What will be the output of :

(i) $x \%*\% y$

(ii) $x * t(y)$ (3)

6. Consider the following dataset that shows the number of times the tasks 5 are performed by either P1, P2 or jointly by P1 and P2 :

Task\Person	P1	P2	Jointly
Laundry	56	34	4
Meal	24	10	4
Cleaning	53	23	20
Dishes	32	56	40
Finances	13	23	70
Driving	10	78	0
Holidays	0	4	0

Write R script to :

- (i) Find the tasks which are performed more by the P1 than the P2.

PART B

2. Consider 'Student' table in a MySQL database 'dbl':
Student(roll_no, name, city, course)

Write R script to perform the following tasks :

- (i) Load relevant packages to connect with the database.
- (ii) Establish the connection with the 'dbl' database.
- (iii) Display all tables of the database 'dbl'.
- (iv) Display the total number of students from the "Student" table.
- (v) Close the database connection. (5)

3. (a) Write output for the following command : (2)

```
switch (5%%2, sum(2:8), summary(c("a", "b")),
sample(10, 5))
```

- (b) Given a list L as :

```
L <- list(
  a = 2,
  b = 3,
  twin = c(2, 2),
  trip = c(2, 2, 2)
)
```

What will be the output of following R statements?

(i) `unlist(L)`

(ii) `lapply(L, length)`

(iii) `sapply(L, length)` (3)

4. Consider the following data frame "df". (1+2+2)

SNo	Value	Class
1	98	A
2	21	B
3	67	C
4	23	A
5	11	A
6	12	C
7	34	C
8	56	B
9	78	A
10	90	C
11	12	C

Write R script to perform the following :

(i) Display the rows of "df" where Class is "A".

(ii) Display the total values for each class.

(iii) Create a suitable plot to show the statistical summary of all values with respect to their class.

5. (a) Given a data frame "rect" containing the length and breadth of five rectangles and a function "rect_area" to compute the area of rectangles as :

```
rect <- data.frame(L=c(10, 5.5, 6, 7.8, 9.7),
                  B=c(6, 4, 1.2, 3, 4))
```

```
rect_area <- function(a, b)
```

```
{
```

```
  a*b
```

```
}
```

Write an R statement to create a package called "my area" to compute the area of rectangles using given data frame and function. (2)

(b) For the given vectors "x" and "y",

```
x <- matrix(rep(1:3, each =2), nrow=3, ncol=2)
```

```
y <- matrix(rep(1:3, length.out=6), nrow=2, ncol=3)
```