

**M. SC. (APPLIED STATISTICS)
(MSCAST)**

Term-End Examination

June, 2026

MST-015 : INTRODUCTION TO R SOFTWARE

Time : 2 Hours

Maximum Marks : 25

Note : (i) *Question No. 1 is compulsory.*

(ii) *Attempt any **two** questions out of the remaining Question Nos. 2 to 4.*

(iii) *Use of scientific calculator (non-programmable) is allowed.*

(iv) *Symbols have their usual meanings.*

1. Answer the following : 5×1=5

(a) Write the output of the following statement :

rep (X = 1 : 3, times = c (1, 2, 3))

(b) What is the difference between the lapply() and sapply() functions ? When

do these two functions give the same output ?

(c) Find the odd one :

if, else, while, function, object, for, next, break, TRUE, FALSE, Inf, NULL, NaN and NA.

(d) Write the output of the following statement :

Cat (LETTERS [1:5], 1:5, sep = “,”，“\n”)

(e) Write the R command to find the inverse of a matrix ‘A’.

2. (a) Write step-by-step execution of the following code : 4

```
X <- 63
```

```
repeat {
```

```
  print (X)
```

```
  X <- X/3
```

```
  if (X < 5) break
```

```
}
```

- (b) Write R commands to create a list with two matrix components 'A' and 'B', where : 4

$$A = \begin{pmatrix} 3 & 6 \\ 4 & 7 \end{pmatrix}$$

and
$$B = \begin{pmatrix} 9 & 6 \\ 8 & 4 \end{pmatrix}.$$

Compute the column sums of both the matrices in a single line command.

- (c) Write an if-else statement to compute the value of y , where : 2

$$y = \begin{cases} 4x \text{ and increase } x \text{ by } 1, & \text{if } x \leq 4 \\ 2x \text{ and decrease } x \text{ by } 1, & \text{if } x > 4 \end{cases}$$

3. (a) Write R command to create a Histogram for the following table and to

add main title, label names, colors and frequencies on the bar of histogram : 4

X	Frequency
1	5
2	9
3	12
4	17
5	10
6	6

- (b) Write the step-by-step execution of the following code : 4

```

Sum = 0
for (i in C (3, 4)){
  for (j in C (5, 6)){
    sum = sum + i * j
  }
}
sum

```

- (c) Write R command to create the function for finding to median of a given vector. 2
4. (a) Create two matrices A and B with the following data : 4

$$A = \begin{pmatrix} 1 & 2 & 5 \\ -1 & 3 & 4 \\ 0 & 2 & 1 \end{pmatrix}$$

and $B = \begin{pmatrix} 2 & 5 & 6 \\ -1 & 4 & 5 \\ 1 & 2 & 0 \end{pmatrix}$

Write R commands to do the following tasks :

- (i) Multiply the two matrices.
- (ii) Write the single line R command to find the dimension, determinant and transpose of two matrices.

- (b) Write R command to compute the mean of the following frequency table : 4

Marks	No. of Students
30—40	04
40—50	06
50—60	25
60—70	15
70—80	08

- (c) Write R command to compute the mean, minimum, maximum and skewness of the following vector : 2

$X = C(23, 20, 30, 18, 15, 29)$

x x x x x