

No. of Printed Pages : 4 **MSTL-015(Set-I)**

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

**Term-End Practical Examination
June, 2025**

**MSTL-015(Set-I) : STATISTICAL COMPUTING
USING R-IV**

Time : 2 Hours

Maximum Marks : 25

Note : (i) Attempt any **one** question.

(ii) Solve the question in R-software and create script file.

(iii) Mention necessary steps, hypotheses, interpretation, etc.

(iv) Symbols have their usual meanings.

1. (a) A clinical trial is conducted to test whether a new drug helps in curing a disease. Twenty patients are randomly assigned to either the treatment group or the control group. The obtained results are given as follows :

Treatment	Cured	Not-cured	Total
	8	2	10
Control	4	6	10
Total	12	8	20

Using Fisher's exact test, check whether there is a significant association between treatment and recovery at 5% level of significance. 10

- (b) A medical researcher follows up 20 patients after a new cancer treatment. The obtained data are as follows : 15

Survival Time (in months)	Status (1 = death, 0 = censored)
3	1
4	1
5	0
6	1
6	0
7	1
8	0

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9	1
10	1
10	0
11	1
12	0
13	1
14	0
15	1
16	1
17	0
18	1
19	0
20	1

(i) Estimate the survival time using the Kaplan-Meier method.

(ii) Also prepare Kaplan-Meier survival curve.

2. First install and load the package “dslabs”. There is a dataset “movielens” in this package. Using this dataset, answer the following questions :

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- (a) Compute the number of ratings for each movie and then plot it against the year the movie released. Use the square root transformation on the counts. 10
- (b) List down the top rated 25 movies for each year since 1993. Also, compute their average rating. 5
- (c) Generally, the most rated movies tend to have above average ratings because more people watch popular movies. To confirm this, stratify the post-1993 movies by ratings per year and compute their average ratings. Make a plot of average rating *vs.* ratings per year and show an estimate of the trend. 10

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