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

M. SC. (APPLIED STATISTICS)

(MSCAST)

Term-End Practical Examination

June, 2025

MSTL-015(Set-II) : 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 medical researcher is studying a new vaccine, which reduces flu risk, and to test it on 180 patients. But suspects that age may be a confunding factor, so the researcher split the data into two

age groups : under 50, 50 and above. The observed data are given as follows :

Age Group : Under 50

	Flu	
	Yes	**No**
Vaccinated	8	42
Not vaccinated	18	32

Age Group : 50 and above

	Flu	
	Yes	**No**
Vaccinated	10	30
Not vaccinated	20	20

(i) Test at 1% level of significance, whether the new vaccine is effective to control flu after adjusting the effect of age.

(ii) Find odd ratio and interpret it.

(b) A clinical study follows three groups of cancer patients receiving three different treatments : Drug A, Drug B and

Drug C. The study followed for 14 months and the obtained data are given as follows :

Patient ID	Time (in months)	Status (1 = death, 0 = censored)	Group
101	6	1	A
102	7	0	A
103	8	1	A
104	10	1	A
105	12	0	A
106	6	1	B
107	7	1	B
108	9	1	B
109	11	0	B
110	13	1	B
111	5	1	C
112	6	0	C
113	8	1	C
114	9	1	C
115	14	1	C

Test whether there is a significant difference in survival time base on the treatments at 1% level of significance.

12+13

2. Consider iris dataset and build neural network model in R-programming by taking species as target variable. Divided the dataset into training and test datasets as 80 : 20. Validate the model using test dataset. Obtain accuracy of both training and test datasets. Evaluate the model. 25

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