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MST-025

M. SC. (APPLIED STATISTICS)
(MSCAST)

Term-End Examination

June, 2026

**MST-025 : CATEGORICAL AND SURVIVAL
ANALYSIS**

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 :

(a) Differentiate between relative risk and odds ratio. 2

- (b) Why censoring is important in survival analysis ? 2
- (c) What does a likelihood ratio greater than 1 indicate ? 1
2. The following data represent the gender (male or female) and smoking status (yes or no) of 20 residents of a society :

Smoking	Gender	
	Male	Female
Yes	10	02
No	03	05

Use an appropriate test to check the association between gender and smoking status at 5% level of significance. 10

3. The following data were obtained to study the pattern of relapse of tumor, for which the study was continued till all patients relapsed :

Patient	Relapse Time (in months)
1	3
2	6

[3]

3	15
4	12
5	9
6	5
7	8
8	8
9	10
10	5

- (i) Estimate the survival function, cdf, pdf and hazard function. 6
- (ii) Plot the survival and hazard curves. 4
4. (a) Differentiate between the Chi-square tests for association and proportions. 4
- (b) Describe the Cox proportional hazard model. 6

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