



QP CODE: 26019313



26019313

Reg No :

Name :

M.Sc DEGREE (CSS) EXAMINATION, MARCH 2026

Fourth Semester

M Sc BIOSTATISTICS

Core Courses - ST020402 - SURVIVAL ANALYSIS AND LIFETIME MODELING

2019 Admission Onwards

0DD06C95

Time: 3 Hours

Weightage: 30

Part A (Short Answer Questions)

*Answer any **eight** questions.*

Weight 1 each.

1. Define event with the help of example.
2. Define type II censoring.
3. What are the uses of life table?
4. Explain cumulative hazard function.
5. What is relative risk and odds ratio?
6. Which distributions describe decreasing hazard rates? If there are more than one, discuss the differences between them.
7. Define Cox Snell residuals.
8. Define predicted prognostic information.
9. Define Tarone Ware test.
10. What is meant by partial likelihood?

(8×1=8 weightage)

Part B (Short Essay/Problems)

*Answer any **six** questions.*

Weight 2 each.

11. What is the “survival function” or “survival curve?” What information about the survival experience of a cohort of subjects is described by the cohort’s “survival curve?”
12. Define hazard ratio. Describe how we obtain the confidence interval for median survival?





13. Explain Gehan's test for two sample problem.
14. Write a note on likelihood ratio test.
15. Write a note on accelerated failure time model.
16. What are the different methods to check proportional hazard assumption?
17. Explain the time dependent extension of the Cox proportional model.
18. Explain the likelihood ratio test for the exponential distribution.

(6×2=12 weightage)

Part C (Essay Type Questions)

Answer any **two** questions.

Weight 5 each.

19. Consider the data in the given table. Is elevated percent standard BMI associated with renal cell carcinoma after controlling the effects of gender?

Percentage of Standard BMI ^a	Male		Female	
	Case	Control	Case	Control
< 140	130	160	60	65
≥ 140	85	55	55	50

20. (A) Discuss on Weibull distribution. (B) Derive the MLE estimate of parameters for data with and without censored observation in Weibull distribution.
21. How to evaluate proportional hazard assumption? Describe in detail.
22. What is accelerated failure time Model? Compare accelerated failure time model with proportional hazard model.

(2×5=10 weightage)

