21P361 (Pages: 2) Name……..

Reg. No……..

THIRD SEMESTER M.A. DEGREE EXAMINATION, NOVEMBER 2022

(CBCSS-PG)

(Regular/Supplementary/Improvement)

CC19P ST3 C11 - APPLIED REGRESSION ANALYSIS

(Statistics)

(2019 Admission onwards)

Time: Three Hours Maximum: 30 Weightage

PART A

Answer any ***four*** question. Each question carries 2 weightages.

1. Discuss simple linear regression model and least square estimation of its parameters.
2. Define hat matrix and state its properties.
3. Define residuals. What are the properties of residuals?
4. What are the possible reasons for heteroscedasticity?
5. Explain orthogonal polynomials.
6. Explain various link functions.
7. Define odds ratio. Explain its meaning.

(2 × 4 = 8 Weightage)

PART B

Answer any ***four*** question. Each question carries 3 weightages.

8. Obtain the confidence intervals for the parameters in a multiple regression model.
9. State and prove Gauss – Markov theorem.
10. Describe the variance stabilizing transformations in constructing a regression model. Also explain methods of transformations to linearise the model.
11. Explain various probability plots to examine the normality assumption in regression analysis.
12. What are the important considerations that arise when fitting a polynomial in one variable?
13. Explain the basic idea of Poisson regression.
14. What do you mean by residual analysis? Explain the analysis of residuals in fitting the GLM.

(3 × 4 = 12 Weightage)

PART C

Answer any ***two*** question. Each question carries 5 weightages.

15. Define multiple regression model. Derive least square estimator of regression coefficient vector. Describe a test procedure to test the overall significance of the multiple regression model.
16. Explain the different methods for model adequacy checking.
17. What is piecewise polynomial fitting? Discuss its need and methods used for evaluation.
18. Explain logistic regression models. Estimate the parameters of the model.

(2 × 5 = 10 Weightage)

****