K24N 0221

Reg. No. : .....

Name : .....

Third Semester M.Sc. Degree (C.B.S.S. – Regular) Examination, October 2023
(2022 Admission)
STATISTICS WITH DATA ANALYTICS
MST3C09 : Regression Analysis

Time : 3 Hours Max. Marks : 80

PART – A

Answer **all** questions. **Each** question carries **2** marks.

1. Obtain the least-squares normal equations for estimating the parameters in a simple linear regression model.
2. Give an estimator for σ^2 in a simple linear regression model. Is it unbiased ?
3. What do you mean by adjusted-R^2 ?
4. Suppose a fitted regression model is $\hat{Y} = 0.93 + 1.243X_1 - 0.788X_2$. Interpret the regression coefficients.
5. What do you mean by generalized least square method ?
6. What is the use of indicator variables in regression ? Give an example.
7. What are nonlinear regression models ?
8. What is the significance of odds ratio ? **(8×2=16)**

PART – B

Answer **any four** questions. **Each** question carries **4** marks.

9. How will you measure the quality of fit of the model to the data ?
10. Obtain the ordinary least square estimate of the parameter in a multiple linear regression model.

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11. Explain how residuals plots are helpful in detecting model inadequacies.

12. What do you mean by heteroscedasticity ? What are its consequences ?

13. Write a note on polynomial regression models.

14. Explain Poisson regression method and how do we estimate the parameters in this case. **(4×4=16)**

PART – C

Answer **any four** questions. **Each** question carries **12** marks.

15. Explain the testing procedure for the significance of parameters in a simple linear regression model.

16. State and prove Gauss-Markov theorem.

17. What is multicollinearity ? What are its consequences ? How can we deal with multicollinearity ?

18. Explain autocorrelation and its consequences. How will you detect autocorrelation in multiple linear regression ?

19. Explain the different stepwise regression techniques for choosing a subset model.

20. Discuss generalized linear models and its estimation procedure. **(4×12=48)**