



Seat No. _____

HAN-003-1173005

M. Sc. (Statistics) (Sem. III) (CBCS) Examination

June - 2023

MS - 305 : Applied Econometrics

(Theory)

Faculty Code : 003

Subject Code : 1173005

Time : $2\frac{1}{2}$ Hours / Total Marks : 70

Instructions :

- (1) Attempt all questions.
- (2) Each question carries equal marks.

1 Answer the following questions : (any seven) **14**

- (1) In ordinal least square Estimation $\text{Var}(\hat{\beta}) - \text{Cov}(\hat{\beta})$ is _____,
Where σ^2 is _____.
- (2) In perfect Multicollinearity, $\text{Var}(\hat{\beta}_2)$ is _____ and $\text{Var}(\hat{\beta}_3)$ is _____.
- (3) Write mean and variance of Run test.
- (4) Write application of Regression Analysis.
- (5) Write a list methodology of Econometrics.
- (6) Explain difference between OLS and GLS.
- (7) Explain VIF (Variance Inflation Factor)
- (8) Explain Tolerance.
- (9) Define Multicollinearity.
- (10) Define econometrics.

2 Answer the following questions : (any two) **14**

- (1) Show that β^{gls} is unbiased estimator of β . Find its variance.
- (2) Explain Autocorrelation.
- (3) Explain Goldfeld-Quandt test in detection of heteroscedasticity.

3 Answer the following questions : **14**

- (1) Explain consequences of Multicollinearity.
- (2) Test the hypothesis about individual regression coefficients.

OR

Answer the following questions. **14**

- (1) Show that ridge estimator is bias estimator of β .
- (2) Explain any two assumptions of the Classical Linear Regression Model (CLRM).

4 Answer the following questions : (any two) **14**

- (1) Discuss the Runs test in detection of autocorrelation.
- (2) Explain Classical Linear Regression Model (CLRM).
- (3) Explain the coefficient of determination R^2 . Also write relation between F and R^2 .

5 Answer the following questions : (any two) **14**

- (1) Explain the Durbin-Watson d-test in autocorrelation.
- (2) Draw Ballentine view of Multicollinearity.
- (3) Discuss method of Generalized Least Squares (GLS) in Heteroscedasticity.
- (4) Explain Graphical method to detect Heteroscedasticity.
