

**2023-24**

**Time - 3 hours**

**Full Marks - 80**

*Answer all groups as per instructions.*

*Figures in the right hand margin indicate marks.*

*Candidates are required to answer  
in their own words as far as practicable.*

**GROUP – A**

1. Answer all questions and fill in blanks as required. [1 × 12]
- (a) What is normal distribution ?
  - (b) What is null Hypothesis ?
  - (c) What is interval estimation ?
  - (d) What is Neyman-Person lemma ?
  - (e) Type-II Error
  - (f) What is Heteroscedasticity ?
  - (g) Define ANOVA.
  - (h) Variance
  - (i) Autocorrelation
  - (j) What is large Sample ?

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- (k) What is degrees of freedom ?  
(l)  $TSS = ESS + \underline{\hspace{2cm}}$ .

**GROUP – B**

2. Answer any eight of the following questions within two to three sentences each. [2 × 8]

- (a) What is Econometrics ?  
(b) Co-efficient of determination  
(c) How to detect autocorrelation ?  
(d) Two properties of efficient estimator  
(e) What is Poisson distribution ?  
(f) What is Z-distribution ?  
(g) What is BLUE ?  
(h) Define method of interval estimation for small sample.  
(i) Define Durbin-Watson test.  
(j) Differentiate between parameter and variable.

**GROUP – C**

3. Answer any eight of the following questions within 75 words each.

[3 × 8]

- (a) What is theoretical Probability Distribution ?

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- (b) Two properties of Interval estimator  
(c) How to detect Heteroscedasticity ?  
(d) Define 'Chi-square' statistics.  
(e) Define two problems of Autocorrelation.  
(f) Define how to calculate Variance Inflation Factor (VIF) ?  
(g) Two properties of binomial distribution  
(h) Consequences of Multicollinearity  
(i) What is critical region ?  
(j) How to draw inferences in case of two variable regression models ?

**GROUP – D**

4. Answer **any four** questions within 500 words each. [7 × 4]

- (a) What is Gauss-Markov Theorem ? Discuss large sample properties of OLS estimator.  
(b) What is Multicollinearity ? Explain different methods of detection of Multicollinearity.  
(c) What is econometrics ? Discuss its scope and importance.  
(d) What is theory of estimation? Distinguish between point estimation and interval estimation

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- (e) Explain how to draw inferences in case of a two-variable regression Model.
- (f) Discuss the problems and consequences of Autocorrelation.
- (g) What is Alternative Hypothesis ? Explain different methods of testing hypothesis.