

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

**School of Liberal Education**

Bachelor of Arts Honours in Economics

Mid Term Examination - Mar 2024

Duration : 90 Minutes

Max Marks : 50

**Sem VI - K1UB604B - Econometrics-II**General Instructions*Answer to the specific question asked**Draw neat, labelled diagrams wherever necessary**Approved data hand books are allowed subject to verification by the Invigilator*

- 1) Show that the regression line passes through the mean of X and Y. K2 (2)
- 2) Prove that  $E(u_i | X_i) = 0$ . K1 (3)
- 3) Prove that the mean value of estimated Y is equal to the mean value of actual Y. K2 (4)
- 4) Explain the probability distribution of disturbances  $u_i$ . K2 (6)
- 5) Elaborate the test of significance approach in hypothesis testing. K3 (6)
- 6) Consider the following formulations of the two-variable PRF: Model I:  $Y_i = \beta_1 + \beta_2 X_i + u_i$ . Model II:  $Y_i = \alpha_1 + \alpha_2 (X_i - \bar{X}) + u_i$ . A. Find the estimators of  $\beta_1$  and  $\alpha_1$ . Are they identical? Are their variances identical? B. Find the estimators of  $\beta_2$  and  $\alpha_2$ . Are they identical? Are their variances identical? K3 (9)
- 7) Illustrate the regression on standardized variables with the help of suitable estimators formula. K4 (8)
- 8) Explain all the numerical properties of OLS method with the help of derivation. K4 (12)

**OR**

- Explain the Gauss-Markov theorem with respect to the OLS method. K4 (12)