



PAMIBIA UNIVERSITY
OF SCIENCE AND TECHNOLOGY

FACULTY OF COMMERCE, HUMAN SCIENCES AND EDUCATION

DEPARTMENT OF ECONOMICS, ACCOUNTING AND FINANCE

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| QUALIFICATION: BACHELOR OF ECONOMICS | |
| QUALIFICATION CODE: 12BECO | LEVEL: 7 |
| COURSE CODE: ECM712S | COURSE NAME: ECONOMETRICS |
| SESSION: JULY 2025 | PAPER: THEORY |
| DURATION: 3 HOURS | MARKS: 100 |

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| SECOND OPPORTUNITY EXAMINATION QUESTION PAPER | |
| EXAMINER(S) | MR EDEN TATE SHIPANGA |
| MODERATOR: | MR. GEBHARD LUCKY SHIGWEDHA |

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| INSTRUCTIONS |
| 1. Answer ALL the questions. 2. Write clearly and neatly. 3. Number the answers clearly. |

PERMISSIBLE MATERIALS

1. PEN,
2. PENCIL
3. CALCULATOR

THIS QUESTION PAPER CONSISTS OF 2 PAGES (Including this front page)

QUESTION 1 [25 marks]

1. What is econometrics (5)
2. With proper examples draw a distinction between mathematical and econometric model? (4)
3. Discuss the two types of error that arise in hypothetical conclusions (8)
4. Define the stochastic disturbance term and three reasons why it exists? (8)

QUESTION 2 [25 marks]

1. Describe the various components of the function $Y_i = E(Y | X_i) + \mu_i$. (2)
2. Discuss the two types of error that arise in hypothetical conclusions (6)
3. State the two distinct features of the interceptless model. (4)
4. One of the "consequences of error of measurement in the regressand is increased variance of the estimators". Formulate a scenario and provide proof of this statement. (4)
5. Consider a two-variable model where consumption as a regressand and income as a regressor.
 - (a) Name the parameter that is used to measure the spread of the values from their expected values? (2)
 - (b) Suppose, a researcher is interested in measuring the strength of the relationship between consumption and income, name the parameter one can use to quantify this relationship? (2)
6. Assuming a three-variable model $Y_t = \alpha_1 + \alpha_2 X_2 + \alpha_3 X_3$, where α_2 and α_3 are partial regression coefficients. You have been asked in a job interview to briefly describe the meaning of the two parameters in this context. (5)

QUESTION 3 [25 marks]

1. Discuss any of the three CLRM assumptions underlying the method of least squares? (6)
2. Show that the OLS slope coefficient estimator $\hat{\beta}_2$ is linear function of Y_i sample value? (4)
3. Convert the following intrinsically functions into linear equations.
 - (a) $Y_t = e^{\beta_1 + \beta_2 X_t + u_t}$ (5)
 - (b) $Y_t = \frac{1}{1 + e^{\beta_1 + \beta_2 X_t + u_t}}$ (5)
 - (c) $Y_t = \beta_1 + \beta_2 \left(\frac{1}{X_t}\right) + u_t$ (5)

QUESTION 4 [25 marks]

1. Interpret the intercept and slope coefficients of the following regression. $\hat{Y}_i = 56.1 - 1.7 X_i$ where Y=% of vote received by the incumbent president and X= unemployment rate (in percentage points) (5)
2. Interpret the intercept and slope coefficients of the following regression. $\ln \hat{Y}_i = 3.5 + 1.35 \ln X_i$ where Y= GNP (in millions of \$) X= Government spending (in mills. of dollars) (5)
3. Interpret the intercept and slope coefficients of the following regression. $\hat{Y}_i = -1.8 + 45.8 \ln X_i$ where Y=inflation rate (%) and X= wage rate (in N\$) (5)
4. Interpret the intercept and slope coefficients of the following regression. $\ln \hat{Y}_i = 4.1 + 0.05 T$ where Y=GDP (in mill. of dollars) and T=time trend (T=1,2,3, representing years) (5)
5. Interpret the intercept and slope coefficients of the following compound growth rate of $\ln \hat{Y}_i = 4.1 + 0.05 T$ where Y=GDP (in mill. of dollars) and T=time trend (T=1,2,3, representing years) (5)