



PAMIBIA UNIVERSITY
OF SCIENCE AND TECHNOLOGY
FACULTY OF HEALTH AND APPLIED SCIENCES

DEPARTMENT OF ACCOUNTING, ECONOMICS AND FINANCE

QUALIFICATION : BACHELOR OF ECONOMICS	
QUALIFICATION CODE: 07BECO	LEVEL: 7
COURSE CODE: ECM712s	COURSE NAME: ECONOMETRICS
SESSION: JULY 2019	PAPER: THEORY
DURATION: 3 HOURS	MARKS: 100

SECOND OPPORTUNITY EXAMINATION QUESTION PAPER	
EXAMINER(S)	MR. PINEHAS NANGULA
MODERATOR:	DR. R KAMATI

INSTRUCTIONS
<ol style="list-style-type: none">1. Answer ALL the questions in section A and B.2. Write clearly and neatly.3. Number the answers clearly.

PERMISSIBLE MATERIALS

1. Scientific calculator
2. Pen and Pencil
3. Ruler

THIS QUESTION PAPER CONSISTS OF _5_ PAGES (Including this front page)

SECTION A

[20 MARKS]

MULTIPLE CHOICE QUESTIONS

1. OLS stands for what in Econometrics?
 - a) Optimally Linearized Solution
 - b) There is no such thing in Econometrics
 - c) The only rock band that Econometricians are crazy about
 - d) Ordinary Least Squares

2. Data collected at a point in time is called
 - a) Cross-sectional data
 - b) Time series data
 - c) Pooled data
 - d) Panel data

3. Data collected for a variable over a period of time is called
 - a) Cross-sectional data
 - b) Time series data
 - c) Pooled data
 - d) Panel data

4. In the estimated model $\log \tilde{Q}_i = 2.25 - 0.7 \log P_i + 0.02 Y_i$, where p is the price and q is the quantity demanded of a certain good and Y is disposable income, what is the meaning of the coefficient on logP?
 - a) If the price increases by 1%, the demanded quantity will be 0.007% lower on average, ceteris paribus
 - b) If the price increases by 1%, the demanded quantity will be 70% lower on average, ceteris paribus
 - c) If the price increases by 1%, the demanded quantity will be 0.7% lower on average, ceteris paribus
 - d) None of the answers above is correct

5. In the estimated model $\log \tilde{Q}_i = 2.25 - 0.7 \log P_i + 0.02 Y_i$, where p is the price and q is the quantity demanded of a certain good and Y is disposable income, what is the meaning of the coefficient on logY?
 - a) If disposable income increases by a thousand dollars, the demanded quantity will be 0.02% higher on average, ceteris paribus
 - b) If disposable income increases by a thousand dollars, the demanded quantity will be 0.0002% higher on average, ceteris paribus
 - c) If disposable income increases by a thousand dollars, the demanded quantity will be 2% higher on average, ceteris paribus

- d) None of the answers above is correct
6. Which of the following are alternative names for the dependent variable (usually denoted by y) in linear regression analysis?
- The regressand
 - The regressor
 - The explanatory variable
 - None of the above
7. Which of the following statements is TRUE concerning OLS estimation?
- OLS minimises the sum of the vertical distances from the points to the line
 - OLS minimises the sum of the squares of the vertical distances from the points to the line
 - OLS minimises the sum of the horizontal distances from the points to the line
 - OLS minimises the sum of the squares of the horizontal distances from the points to the line.
8. The residual from a standard regression model is defined as
- The difference between the actual value, y , and the mean, \bar{y}
 - The difference between the fitted value, \hat{y} , and the mean, \bar{y}
 - The difference between the actual value, y , and the fitted value, \hat{y}
 - The square of the difference between the fitted value, \hat{y} , and the mean, \bar{y}
9. Which one of the following statements best describes the algebraic representation of the fitted regression line?
- $\hat{y}_i = \hat{\alpha} + \hat{\beta}x_i + \hat{u}_i$
 - $\hat{y}_i = \hat{\alpha} + \hat{\beta}x_i$
 - $\hat{y}_i = \hat{\alpha} + \hat{\beta}x_i + u_i$
 - $y_i = \hat{\alpha} + \hat{\beta}x_i + \hat{u}_i$
10. Which one of the following statements best describes a Type II error?
- It is the probability of incorrectly rejecting the null hypothesis
 - It is equivalent to the power of the test
 - It is equivalent to the size of the test
 - It is the probability of failing to reject a null hypothesis that was wrong

Section B**[80 MARKS]**

Answer All questions in this section

Question One**[20 marks]**

The following is the econometric model which is presented in four different forms. You are required to interpret each of them.

- a) $\hat{C} = -184.078 + 0.70641 \text{Income}$ [5 marks]
 b) $\hat{C} = -30918.072 + 4022.73841 \text{LogIncome}$ [5 marks]
 c) $\widetilde{\text{Log}C} = 7.203 + 0.00018 \text{Income}$ [5 marks]
 d) $\widetilde{\text{Log}C} = -0.7957 + 1.0464 \text{Logincome}$ [5 marks]

Question Two**[20 marks]**

- a) The following are linear intrinsically linear regression models. You are required to transform them into linear regression models

- i. $\ln Y_i = \frac{1}{1 + e^{\beta_1 + \beta_2 X_i + u_i}}$ [4 marks]
 ii. $\ln Y_i = \frac{1}{\beta_1 + \beta_2 X_i + u_i}$ [4 marks]
 iii. $Y_i = \frac{X^2}{\exp(\beta_1 + \beta_2 X_i + u_i)}$ [4 marks]
 iv. $\ln Y_i = 1 + \exp(-\beta_1 - \beta_2 X_i)$ [4 marks]

Question Three**[25 marks]**

The following is a hypothetical data on weekly family consumption expenditure Y and weekly family income X.

Y, N\$	X, N\$
70	80
65	100
90	120
95	140
110	160
115	180
120	200
140	220
155	240

- a) Estimate β_1 and β_2 from the data above which meet the following condition $E(u_i) = 0$ and interpret the coefficients [12 marks]
 b) If the value of r^2 is 0.96, interpret it. [5 marks]
 a) What is the role of the stochastic error term u_i in regression analysis? What is the difference between the stochastic error term and the residual term? [8 marks]

Question Four

[15 marks]

- a) Discuss five practical consequences of multicollinearity [10 marks]
- b) What are dummy variables and why are they important in the model? [5 marks]

All the best