



GWANDA STATE UNIVERSITY

FACULTY OF NATURAL RESOURCES MANAGEMENT AND AGRICULTURE

DEPARTMENT OF HORTICULTURE AND CROP PRODUCTION

**BACHELOR OF SCIENCE HONOURS DEGREE IN AGRICULTURAL
ECONOMICS**

Econometrics 1: LAE 2202

Second Semester Supplementary Examination Paper

JUNE 2025

This examination paper consists of 3 pages

Time Allowed: 3 hours

Total Marks: 100

Special Requirements: None

Examiner's Name: N.T Muzeza

INSTRUCTIONS

1. Answer **all** questions in Section A
2. Answer **two** questions in Section B

MARK ALLOCATION

QUESTION	MARKS
SECTION A	60
SECTION B	40
TOTAL ATTAINABLE MARKS	100

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SECTION A: Answer ALL questions in section A

Question 1

- a) Fully explain types of data that are found in the econometric field? [8]
- b) Explain the difference between an estimate and an estimator in Econometrics [4]

Question 2

- a) Discuss extensively the assumption of classical linear regressions model [8]
- b) Given the following model:

$$y_i = \beta_1 + \beta_2 x_i$$

- i. Indicate what's wrong with the model and why is not accepted econometrically [3]
- ii. Illustrate how the above model can be corrected [2]
- iii. Why do we need to include the corrected error in econometric models? [10]

Question 3

- a) Explain the following econometric violation
 - i. Auto correlation [2]
 - ii. Heteroscedasticity [2]
 - iii. Multicollinearity [2]
- b) Discuss the BLUE properties of Ordinary Least Squares (OLS) [4]

Question 4

Given the following logistic regression Stata regression output

```

Logistic regression                               Number of obs   =           80
                                                LR chi2( 7)     =          89.33
Log likelihood = -10.786044                       Prob > chi2     =           0.0000
                                                Pseudo R2      =           0.8055
  
```

success	Odds Ratio	Std. Err.	z	P> z	[95% Conf. Interval]
age	6.37117	5.846344	2.02	0.044	1.054716 38.48601
agesq	.9712556	.0132546	-2.14	0.033	.9456214 .9975847
exp	.1196151	.086514	-2.94	0.003	.0289827 .4936672
hhsz	8.122323	6.405404	2.66	0.008	1.731442 38.10241
income	1.018971	.0077087	2.48	0.013	1.003973 1.034192
visits	2.283881	2.15359	0.88	0.381	.3597753 14.49825
gender	.6136933	.8072517	-0.37	0.710	.0465888 8.083904

- a) Give a full detailed economic interpretation of the regression results [10]
- b) What would you recommend, from the regression results? [5]

SECTION B: Answer TWO questions from section B

Question 5

- a) Using multiple regression of the form $Y = b_0 + b_1 x_1 + b_2 x_2 + u$. Derive the parameter estimators of b_1 and b_2 . [10]
- b) Discuss the difference between Ordinary least squares estimation and maximum likelihood estimation (MLE) [10]

Question 6

Fully discuss, with appropriate examples, the methodology of econometrics [20]

Question 7

- a) Explain the term goodness of fit in econometric analysis [5]
- b) Given the following) Keynesian consumption function:

$$Y_i = -184.070 + 0.7064 x_i$$

$$\text{Var}(\beta_1) = 240.1707 \quad \text{Se}(\beta_1) = 46.26$$

$$\text{Var}(\beta_2) = 240.1707 \quad \text{Se}(\beta_2) = 46.26$$

$$r^2 = 0.998406$$

- i. Interpret the equation critically [5]
- c) Fully explain the various steps in carrying out empirical economic analysis [5]
- d) Critically discuss why we employ Normality assumption [5]

END OF EXAMINATION