UNIVERSITY OF SWAZILAND

FINAL EXAMINATION PAPER

PROGRAMME:	**BACHELOR OF SCIENCE IN AGRICULTURAL ECONOMICS AND AGRIBUSINESS MANAGEMENT**
COURSE CODE:	**AEM 302**
TITLE OF PAPER:	**INTRODUCTION TO ECONOMETRICS**
TIME ALLOWED:	**TWO HOURS**
INSTRUCTIONS:	**1. ANSWER ALL FOUR (4) QUESTIONS** **2. USE THE FORMULAS ON PAGE 3 TO ANSWER THE QUESTION # 1**

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QUESTION #1 [25 Marks]

You are given the data in the following table where Y = endogenous variable and X = exogenous variable.

Yi	86	79	76	69	65	62	52	51	48
Xi	3	7	12	17	25	35	45	55	70

a) Use the ordinary least squares method to estimate the regression coefficients [10 Marks]
b) Graph the estimated regression equation [5 Marks]
c) Calculate the coefficient of determination [10 Marks]

QUESTION #2 [25 Marks]

Describe and discuss the anatomy of econometric modeling [25 Marks]

QUESTION #3 [25 Marks]

a) Develop an analysis of covariance (ANCOVA) econometric model containing at least four variables of your choice [10 Marks]
b) Define your variables in part (a) [8 Marks]
c) Interpret your regression model for each coefficient [7 Marks]
Hint: Interpret the coefficients of your variables without estimating their values.

QUESTION #4 [25 Marks]

Define the following terms:

a) Variation [5 Marks]
b) Test of significance [5 Marks]
c) Logit model [5 Marks]
d) Homoscedasticity [5 Marks]
e) Specification error [5 Marks]

SLOPE AND y-INTERCEPT FOR THE ESTIMATED REGRESSION EQUATION:

$$b_1 = \frac{\sum(x_i - \bar{x})(y_i - \bar{y})}{\sum(x_i - \bar{x})^2} \qquad b_0 = \bar{y} - b_1\bar{x}$$

COEFFICIENT OF DETERMINATION:

SUM OF SQUARES DUE TO ERROR: $SSE = \sum (y_i - \hat{y})^2$

SUM OF SQUARES DUE TO REGRESSION: $SSR = \sum (\hat{y} - \bar{y})^2$

TOTAL SUM OF SQUARES: $SST = \sum (y_i - \bar{y})^2$

$$r^2 = \frac{SSR}{SST}$$

END OF PAPER