**OLABISI ONABANJO UNIVERSITY, AGO-IWOYE** 

**FACULTY OF MANAGEMENT SCIENCES** 

**DEPARTMENT OF ECONOMICS** 

2007/2008 SESSION, HARMATTAN SEMESTER EXAMINATION

COURSE CODE/ TITLE: ECO317- INTRODUCTORY ECONOMETRICS

INSTRUCTION: ANSWER QUESTION ONE (1) AND ANY OTHER TWO (2) QUESTIONS

TIME ALLOWED: Thr A0 mins

 The table below depicts the data on output and capital expenditure in millions of naira for a period of ten months for a manufacturing industry.

			- 55			£000				
Months	1	2	3	4	5	6	7	8	9	10
Capital expenditure (#'m), X	2	3	7	6	8	9	11	10	11	12
Company's output ( # ' m ), Y	5	8	7	8	9	11	10	13	14	15

n=10

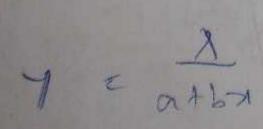
Required:

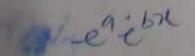
- (i) Compute the correlation coefficient and interpret your result.
- (ii) Test for the significance of the correlation coefficient when  $t_{0.05} = 1.86$
- (iii) Estimate the parameters of the linear stochastic regression model.
- (iv) Find and interpret the coefficient of determination.
- (v) Calculate the standard errors of the estimated parameters in (iii) above.
- (vi) Test for the statistical significance of the estimated parameters in (iii) above given the critical value of t at 5% = 1.96.
- (vii) Forecast the value of capital expended when output is 12 million naira and the output level when the capital expenditure is 15 million naira.

(30 marks)

- 2. (a) What is an econometric model? Evaluate the link between Mathematical economics, Statistics and Econometrics.
  - (b) Discuss in details the criteria you would use to evaluate the results of an estimated relationship.
  - (c) Explain vividly the goals of an econometric model and the steps required in econometric analysis.

(20 marks)





- 3. (a) Explain what is meant by model specification?
  - (b) From the economic relationship specified as  $Y_1 = b_0 + b_1 X_1 + e_1$
  - (i) Give five (5) reasons why the error terms (e<sub>i</sub>) are included in the above?
    - (ii) What are the assumptions underlying its inclusion in the relationship?
    - (iii) Derive the formulae for estimating the parameters of the linear stochastic regression model
    - (c) Explain how to test the statistical significance of the estimated coefficients of the regression model?

(20 marks)

- 4. (a) Distinguish clearly between the point estimate and interval estimate.
  - (b) What are the desirable properties of an estimate?
  - (c) The table below includes the rankings of ten courses (of Economics Dept., O. O. U.) by two students, one studying Economics and one Economics Education.

Course code/ Eco	301	302	303	304	305	306	307	314	316	317
Eco's ranking	8	5	1	9	6	2	4	7	3	9
Eco Ed's ranking	5	4	7	3	9	8	2	3	6	9

Required:

- Can you infer from the data above that the ten courses are equally popular among the students?
- Interpret the economic meaning of the obtained rank correlation coefficient. (ii)
- Highlight the limitations of the theory of linear correlation. (iii)

(20 marks)

- (a) Compare and contrast the differences between coefficient of multiple determination and the adjusted coefficient of multiple determination.
- (b) The intermediate results of the quantity demanded of a commodity (Y), its price(X1) and consumer's income (X2) are given below from sample data of fifteen (15) observations.  $\Sigma Y = 5515.4$ ,  $\Sigma X_1 = 6041.4$ ,  $\Sigma X_2 = 120$ ,  $\Sigma Y^2 = 66042.3$ ,  $\Sigma X_1^2 = 84855.1$ ,  $\Sigma X_2^2 = 280$ ,  $\Sigma Y X_1 = 74778.4$ ,  $\sum yx_2 = 4250.9$ ,  $\sum x_1x_2 = 4796$ . Compute
- the unadjusted and adjusted R2 and interpret the results.
- the parameters of the regression model and state the meaning of your results. (ii)
- the variances and the standard errors of the estimated parameters. (iii)
- test for the statistical reliability of the estimates(b0,b1,b2)at 5% level of sign.(i.e., (i) t<sub>0.025</sub>=2.365)

