Time Allowed: 2 Hours

Course Code: ECO 317
Course Title: Introductory Econometrics

Instruction: Attempt all questions in Section A and TWO questions from Section B.

SECTION A

1. For each of the following statements, state whether it is *True, False or Ambiguous*. Justify your choice:

(i) The spurious result from a simple regression analysis fortifies the property of asymptotic.

(ii) A necessary condition is determined by economic theory while sufficient condition is determined by statistical theory.

(iii) The mean of stochastic variable is constant while its variance is zero.

(iv) Negative serial correlation is sought-after while positive serial correlation is preferable.

(v) If the correlation coefficient between two exogenous variables is approximately 0.99, the inclusion of these variables in a model results in serial correlation problem.

(vi) One of the differences among economic model, mathematical model and econometric model is illogical and Sensible.

(vii) Omission of variable in a model may lead to the deviation of observations from a line.

(viii) High t-statistic and low standard error are both desirable in explaining the significance of a variable in a model.

(ix) When one or more partial regression coefficients are statistically significant on the basis of the individual t-test, it means that all partial regression coefficients are collectively statistically insignificant.

(x) A logged variable measures marginal effect while a differenced variable measures short-run effect.

20 marks

2. The table below represents the "Empirical result of the relationship between Inflation Rate (inf) and Unemployment (UNP) in Nigeria between 1986 and 2015".

Exogenous Variables	Coefficients	Standard Error	t-Statistic
Constant	0.742	A	2.60*
Inflation Rate (Inf)	-0.76	0.73	B
Income Level (Y)	C	0.11	1.98**
Interest Rate (int)	0.23	D	1.21

F-statistic: 5.34* R^2: 9.76   Adjusted R^2: 8.65   Durbin Watson value: 1.67

Note: (*), (**) implies (1%), (5%) significance level respectively.

If the model estimated was $\ln(UNP) = a_0 + a_1 Inf + a_2 \ln(Y) + a_3 int + e$

Required:

(i) Fill in the value for the spaces A, B C, D.

(ii) Is the model statistically significant?

(iii) Does the model have autocorrelation problem? Why?

(iv) Does the model have high goodness of fit? Why?

(v) Interpret the completed result in detail.

15 marks

3. Given the hypothetical quantity demanded of a commodity Y, its price, X_1, and consumers' income X_2, in the table below:

SN	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Y	40	45	50	55	60	70	65	65	75	75	80	100	90	95	85
X_1	9	8	9	8	7	6	6	8	5	5	5	3	4	3	4
X_2	400	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800

(a) Fit an Ordinary Least Square (OLS) regression to these observations.

(b) Test at the 5% level for the statistical significance of the slope parameters.

(c) Test for the overall significance of the regression at 5%.

(d) Find the coefficient of price elasticity of demand and income elasticity of demand at the means

(e) Report all the results in summary and round off all calculations to two decimal places.

17.5marks

4. (a) What is meant by perfect multicollinearity? What are its effects?

(b) What is meant by high, but not perfect, multicollinearity? What problems may result?

(c) How can multicollinearity be detected in a model?

(d) What can be done to overcome or reduce the problems resulting from multicollinearity?

17.5marks

5. (a) Define Autocorrelation. Is autocorrelation desirable in an estimated result? Discuss.

(b) The table below represents the performance of two students in the series of Econometrics tests conducted

Student A	10	14	16	18	9
Student B	11	8	17	15	10

If the performance of student A depends on the performance of B while student B acts in parallel, is there a serial correlation in their model. If any, use appropriate method to correct the problem.

(c) Enumerate the steps involve in methodological research in Econometric model.

17.5marks

6. (a) Compare and contrast among economic model, mathematical model and econometric model.

(b) List the assumptions of classical linear regression model.

(c) Explain what is meant by model specification?

17.5marks

GOOD LUCK