



**National Open University of Nigeria**

Plot 91, Cadastral Zone, Nnamdi Azikiwe Express Way, Jabi- Abuja

**Faculty of Social Sciences  
Department of Economics**

**October/November Examination 2016**

**Course Code: ECO 355**

**Course Title: Introduction to Econometrics I**

**Credit unit: 2**

**Time Allowed: 2 hours**

**Instruction: Answer three questions in all. QUESTION TWO is COMPULSORY.**

**Question:**

1. i) State and explain the assumptions linear regression.  
ii) Explain why these assumptions are required. **(20 marks)**
2. As a student of econometric study, you were provided with data on rural families in Nigeria as given below. Determine the relationship that exists between years of education and monthly income.

Years of Education and Level of Income

Years of Education (X)		6	8	10	11	13	14	17
Income (₦'000) (Y)	2	2	3	4	6	9	11	12

- i) State the deterministic form of the OLS regression
  - ii) State the stochastic equation for the OLS estimate
  - iii) Assuming a linear relationship between the two variables, calculate the values of the OLS estimators  $\alpha$  and  $\beta$ .
  - iv) State the regression equation from the OLS estimations
  - v) If Tunde's years of educational attainment were twenty, determine his monthly salary. **(30 marks COMPULSORY)**
3. Prove that  $\hat{\alpha}$  is an unbiased estimator of  $\alpha$ . That is  $E(\hat{\alpha}) = \alpha$ . **(20 mark)**
  4. i) State  $R^2$  known name in econometrics and discuss in detail what you understand of  $R^2$  in OLS estimation.  
ii) If  $C_t = 15.116 + 0.160y_t^d$   
(2.223) (0.049)  
 $R^2 = 0.741$   $n = 20$   $\sigma = 4.002$   
Interpret the  $R^2$  in the OLS output, and state the number of observation(s) involved. **(20 mark)**

5. i) Given that  $\text{unemployment} = 0.4 - 0.5\text{GDP}$   
 $R^2 = 0.8214$ .

Interpret the outcome critically.

- ii) Explain briefly hypothesis testing, and discuss fully the forms hypothesis testing. **(20 marks)**