BACHELOR OF ARTS EXAMINATION, 2019

(2nd Year, 2nd Semester)

ECONOMICS (Honours)

INTRODUCTORY ECONOMETRICS

Time : Two hours Full Marks : 30

Answer any three questions

1. (a) Show that the OLS estimator of the slope parameter of a two variable linear regression model is the best linear unbiased estimator.

(b) A sample of 10 observation corresponding to non- auto correlated and homoscedastic regression model

$$Y_i = \alpha + \beta X_i + u_i$$

Where the variables are usually defined and have the associated properties produces :

$\sum Yi = 96$, $\sum Xi = 80$, $\sum_{Xi} 2 = 668$, $\sum_{Yi} 2 = 952$, $\sum XiYi = 789$

(i) Test the hypothesis that X_i significantly affects Y_i at 5 % level of significance.

(ii) Find out 95% confidence interval of β.

Given $t_{0.975, 8} = 2.306$

5+5=10

2. (a) Explain the concept of an unbiased estimator.

(b) Consider a multivariate linear regression model

$$\mathbf{Y=X\beta+U}$$

$\mathbf{Y}$=nx1, $\mathbf{X}$=nxk, $\boldsymbol{\beta}$=kx1, U=nx1, where the variables have their usual meaning and the associated properties. Find out the unbiased estimator of the variance of the term **U**.

3+7=10

3. (a)Explain the concept of hetroscedasticity.

(b) How do you test for the existence of hetroscedasticity?

(c) Consider a simple case where the pattern of the deviation from the homoscedasticity is known. How do you estimate the parameters of such model?

3+5+2=10

4. (a) Explain the problem of multicollinarity and its consequences.

(b) Explain whether dropping of the variables can solve the problem of multicollinearity.

5+5=10

5. (a) Explain the problem of autocorrelation.

(b) Explain autoregressive process of order 1 highlighting the basic assumptions

(c) How do you test for the existence of first order autoregressive process?

2+2+6=10

[Turn over

6. Write short note on (Any two)

(a) Maximum likekihood method of estimation method for two variable model

(b) Dummy variable and dummy variable trap

(c) Test for the restriction $H_0 : \beta_2 = \beta_3 = \ldots\ldots\ldots = \beta_k = 0$

Using the specification $\mathbf{R\beta=r}$, where $\mathbf{R}$=qxk, $q \leq k$, $\mathbf{r}$ is a q element vector, in the multivariate regression model.

(d)Anova Test for linear regression model.

5+5=10