**KABARAK UNIVERSITY**

**DPBA 721: ECONOMETRICS CAT, 14/03/2020**

1. (a). With clear illustrations where appropriate, distinguish between the following concepts:

 (i) Fixed Effects and Random Effects models **(4 Marks)**

 (ii) Ordinary Least Squares and logistic regression **(4 Marks)**

 (b) Write Short notes on the following.

1. Consistency **(4 Marks)**
2. Efficiency **(4 Marks)**

(2). An econometrician wanted to investigate the effects of family size (F) and income (Y) on household consumption expenditure (C). Using a sample size of 89 households he obtained the following results in deviation form.

 50.5 -66.2 36.8

 -66.2 967.1  39.1

 0.0218 0.0015

 0.0015 0.0011

 , , , =3.9

(i). Specify a model to estimate the relationship between consumption expenditure, income and family size. **(2 Marks)**

(ii) Estimate the model and interpret your results.  **(7 Marks)**

(iii) Calculate the variance covariance matrix for the estimate . **(3 Marks)**

(iv) Conduct joint test hypothesis test on the slope coefficients at 5% level of significance

 **(4 Marks)**

3.(a) Explain the concepts of stationarity and invertibility. Why are they important in the analysis of time series data? Present examples of stationary and non-stationary, invertible and non-invertible processes. **(8 Marks)**

(b). Describe the steps of the DW test for autocorrelation. What are its disadvantages and

which alternative tests can you suggest?  **(6 marks)**

4. Assume for the model that

 , ,, 26. 74.5 -8

 = 4.5 1 -1.5


 -8 -1.5 2.5

Determine the following:

1. Variance-covariance matrix for  **(5 Marks)**
2. Conduct hypotheses test on the slope coefficients at 5% levels of significance

given that =2.5 and  **(5 Marks)**

 (iii) The value of  and interpret your result. **(4 Marks)**