EX/PG/ECO/2.3/34/2017(OLD)

MASTER OF ARTS EXAMINATION,2017(OLD)

(1st YEAR,2nd SEMESTER)

ECONOMICS

ECONOMETRICS– II

(Old Syllabus)

Time: 2 HOURS **Full marks: 30**

Group A

1 (a) Explain the concept of the following processes AR, MA, ARMA and ARIMA

(b) How do you test the statistical significance of the parameters of AR and MA process?

8+7

OR,

2(a) Explain the idea of covariance stationary process.

(b) Distinguish between Trend stationary process (TSP) and Difference stationary Process (DSP)

(c) Discuss different reasons why one should test whether the process belongs to TSP or DSP.

(d) How do you test whether a process belongs to TSP or DSP class?

3+4+3+5

Group B

5. (i)Consider the following three equation structural model:

$$y_1 = \gamma_{12} y_2 + \delta_{11} z_1 + \delta_{12} z_2 + \delta_{13} z_3 + u_1$$
$$y_1 = \gamma_{22} y_2 + \gamma_{23} y_3 + \delta_{21} z_1 + u_2$$
$$y_3 = \delta_{31} z_1 + \delta_{32} z_2 + \delta_{33} z_3 + u_3$$

Where $z_1=1$ (to allow an intercept), $E(u_g)=0$, all g, and each z_j is uncorrelated with each u_g. You might think of the first two equations as demand and supply equation depends on a possibly

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endogenous variable y_3 (such as wage costs) that might be correlated with u_2. For example u_2 might contain managerial quality.

(a) Show that a well-defined reduced form exists as long as $\gamma_{12} \neq \gamma_{22}$.

(b) Allowing for structural errors to be arbitrarily correlated, determine which of these equations is identified.

(ii) Are three stage least square estimators consistent?

5+5+5

6. **(i) The following three equation structural model describes a population:**

$$y_1 = \gamma_{12}y_2 + \gamma_{13}y_3 + \delta_{11}z_1 + \delta_{13}z_3 + \delta_{14}z_4 + u_1$$
$$y_2 = \gamma_{21}y_1 + \delta_{21}z_1 + u_2$$
$$y_3 = \delta_{31}z_1 + \delta_{32}z_2 + \delta_{33}z_3 + \delta_{34}z_4 + u_3$$

Where you may set $z_1=1$ to allow an intercept. Make the usual assumptions that $E(u_g)=0$ for $g=1,2,3$ and that each z_j is uncorrelated with each u_g. In addition to exclusion restrictions that have already been imposed, assume that $\delta_{13} + \delta_{14} = 1$.

(a) Check order and rank conditions for the first equation. Determine the necessary and sufficient conditions for the rank condition to hold.

(b) Assuming that the first equation is identified, propose a single equation estimation method with all restrictions imposed. Be very precise.

(c) If you try to estimate the second equation by ordinary least square method, the OLS estimators will be biased and inconsistent. True/False, Justify your answer.

5+5+5