EX/PG/ECO/2.3/34/2017

MASTER OF ARTS EXAMINATION,2017

(1st YEAR,2nd SEMESTER)

ECONOMICS

ECONOMETRICS– II

(New Syllabus)

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

Answer any three questions taking at least one from each group **(10X3=30)**

Group A

1(a)What do you mean by seemingly Unrelated Regression Equation (SURE)?

(b) Construct a suitable model satisfying the properties of seemingly unrelated regression equation and derive the appropriate estimator for such model.

(c) Give some economic examples.

3+5+2

2(a). Explain clearly ARMA (q,p) and ARIMA (q,d,p) stating the necessary assumptions and hence distinguish between them.

2(b) Why do we need to carry out such test? Explain one such test procedure.

5+5

3(a) What do you mean by Method of Moments estimators. In this context explain the concept of Generalised Method of moments (GMM) estimators.

(b) Show that OLS estimator is a special case of GMM estimator.

3+7

[Turn over

4 For T=2 consider the standard panel data model

$$y_{it} = x_{it}\beta + \alpha_i + \varepsilon_{it}$$

(a) Numerically compare the fixed effect and first difference estimates.

(b) Compare the assumptions of the fixed effect model and the random effect model.

5+5

5. 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 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.

5+5

6. 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.

5+5