MASTER OF ARTS EXAMINATION, 2023

(2nd Year, 1st Semester)

ECONOMICS

[ADVANCED ECONOMETRICS I]

Time : Two Hours Full Marks : 30

Answer any ***three*** questions.

1. (a) Explain the concept of Generalized Method of Moments (GMM) estimator.
   (b) Show that OLS estimator is a special case of GMM Estimator.
   (c) Explain the concept of continuously updated GMM estimator. 3+4+3=10
2. Let the true model be
   (i) $Y_i = \beta_1 + \beta_2 x_{2i} + p_3 x_{3i} + u_i$ 1
   However, due to some mistake, the researcher has not included x_{3i}
   Thus, the under fitted model is
   (ii) $Y_i = \beta_1 + \beta_2 x_{2i} + v_i$ 2
   Discuss the effect of estimation of the equation (2) on (i) the properties of the estimators of β_2 and β_1 and (ii) the test of hypothesis of β_2. 4+3+3=10

3. Derive the Log Likelihood Function under standard Heckman selection model (1979). Under what circumstances, two-step estimation is better than the maximum likelihood method of estimation? 7+3=10
4. Suppose, 100 children are surveyed. They are classified according to their mal-nutritional status. Mal-nutrition is measured by stunting, wasting and under-weight. A child may suffer from any one or more than one type of mal-nutrition or may be free from mal-nutrition. The status of mal-nutrition of a child depends on the per capita family income, mother's educational level, father's level of education, intake of healthy food per capita and other unobservable factos.
   a. Categories the children according to their mal-nutrition level.
   b. Construct a suitable model (in detail) in explaining the variability of the mal-nutrition status of the child following the natural ordering. (You may consider any one of the distributional pattern of random disturbance term).
   c. Briefly explain the method of measuring the goodness of fit in the above model. 3+5+2
5. a. "Forward orthogonal transformation and mean deviation transformation are the improvement in case of unbalanced panel data framework." Explain.

   b. What are the drawbacks of using instrumental variable method in estimation of dynamic panel data analysis ? 5+5=10

6. Write short note on (any ***two***) 5+5=10
   a. Consequences of the misspecification regarding the distribution of error term in a regression model.
   b. Test based on Box Cox transformation.
   c. Heteroscedastic and autocorrelation consistent (HAC) estimator for GMM
   d. Full information Maximum Likelihood estimation method.