MASTER OF ARTS EXAMINATION, 2024

(2nd Year, 1st Semester)

ECONOMICS

PAPER : ADVANCED ECONOMETRICS—I

Time : *Two Hours*   *Full Marks* : 30

1.   *(a)*   Let the true model be

   $$y_i = \beta_1 + \beta_2 x_{2i} + \beta_3 x_{3i} + u_i \quad \text{...................(1)}$$

   However, due to some mistake, the researcher has not included x_{3i}.

   And the fitted model is

   $$y_i = \beta_1 + \beta_2 x_{2i} + v_i \quad \text{...................(2)}$$

   For the model (2) justify whether the following statements are true or false :

   (i)   The estimator of the coefficient β_2 will always be biased.

   (ii)   The estimator of the coefficient β_1 will always be biased.   4×2=8

   (b)   Let the correct model be

   $$y_i = \beta_2 x_{2i} v_i$$

   where the disturbance term v_i is log normally distributed with mean zero and variance σ^2.

But instead the researcher has estimated the following relationship :

$$y_i = \beta_2 x_{2i} + v_i \quad \text{...................(2)}$$

where the disturbance term of the model satisfies the properties of classical linear regression model. Discuss the consequences of such regression.   7

(OR)

2.   (i)   Explain the concept of GMM estimator. Show that instrumental variable estimator can be interpreted as GMM estimator.

   (ii)   Considering GMM estimators, how do you test for linear restrictions of the model?

   (iii)   Explain the concept of continuously updated GMM estimator and the method of obtaining such estimator.
                                               5+5+5=15

3.   The choice of tourist place within the domestic country depends on the distance from the residence, cost of travel, personal income, number of travelers, number of aged travelers, availability of leave and personal taste and preference. The option of the tourist spot is given below :

Travel to forest = 1

Travel to mountain = 2

Travel to sea beach = 3

Travel to city = 4

Travel to historical place = 5

Frame an appropriate probabilistic choice model to address the above mentioned problem in detail. State the response probability of the problem. Derive the marginal effect of change in one unit of travel cost on the response probability. State the log likelihood function of the problem.

However, if the choice of the tourist place within the domestic country depends only on the personal income, number of travelers, number of aged travelers, availability of leave and personal taste and preference, then what will be the appropriate model and how does the new model differ from the previous one?   5+1+4+1+4=15

(OR)

4.   Export performance of Indian manufacturing firms depends upon the relative price of the product in the international market, size of the firm, age of the firm, firm level efficiency, ownership pattern of the firm and other unobserved factors. However, it is not compulsory for the domestic firm to participate in the international market. In fact the export decision of a firm depends on its geographical location and distance from the port along with the above mentioned factors. Frame the suitable econometric model in details. Derive the log likelihood function for the model. What are the problems that we have expected to face during the maximization of log likelihood function in this case? What will be the second best alternative to estimate the above model if log likelihood function does not converge?   4+4+2+5=15

★ ★ ★