RAMAKRISHNA MISSION VIDYAMANDIRA

(Residential Autonomous College affiliated to University of Calcutta)

B.A./B.Sc. FOURTH SEMESTER EXAMINATION, SEPTEMBER 2020

SECOND YEAR (BATCH 2018-21)

Date : 26/09/2020 **ECONOMICS (Honours)**

Time : 11.00 am – 3.00 pm **Paper : IV** Full Marks : 50

Group - A

Answer question No. 1 & **any three** from the rest.

1. Consider the following stochastic regression model built upon the linear relationship between independent variable X (marks in statistics in final examination) and the dependent variable Y (marks in econometrics in final examination):

   $Y_i = 10 + 2X_i + \varepsilon_i$, where $\varepsilon_i \sim N\left(0, 2^2\right)$. Let us randomly choose two students (student A & student B) from the population. It's found that student A has scored 25 in statistics & student B has scored 30 in statistics.

   a) What is the probability that student B has scored exactly 5 marks more in Econometrics than what student A has scored in the same? If you're not able to compute the probability, justify the reason behind it. [2]

   b) What is the probability that student B scores at least 10 marks more than student A in econometrics? [8]

2. Let $\hat{u}_i$ be the residuals in the least square fit of y_i against x_i (i=1,2,……..,n). Derive the following results

   $\sum_i \hat{u}_i = 0$ & $\sum_i x_i \hat{u}_i = 0$ [5]

3. Justify why the OLS estimators are same as the maximum likelihood estimators in the case of estimating regression parameters (intercept & slope) of simple linear regression. [5]

4. In the regression model $y_i = \alpha + \beta x_i + u_i$, if the sample mean $\bar{x}$ in zero, show that $Cov\left(\hat{\alpha}, \hat{\beta}\right) = 0$, where $\hat{\alpha}$ and $\hat{\beta}$ are the OLS estimators of α and β. [5]

5. Consider the Cobb-Douglas Production function in its stochastic form

   $Y_i = \beta_1 X_{2i}^{\beta_2} \; X_{3i}^{\beta_3} \; e^{ui}$; i = 1,2,…….,n,

   where Y = output , X_2 = labour input , X_3 = capital input, u = stochastic disturbance term,

   e = base of natural logarithm. Describe the steps for testing the constant return to scale i.e. perform $H_0 : \beta_2 + \beta_3 = 1$

   Vs. $H_1 : \beta_2 + \beta_3 \neq 1$, at α% level of significance. [5]

Group – B

Answer all the **three questions** [3 × 5]

6. "Marshallian inefficiency is observed empirically. This suggests that the preponderance of sharecropping in Asia is unproductive. We studied how sharecropping, despite this inefficiency, can be an equilibrium outcome." Discuss the concept of Marshallian inefficiency regarding share cropping. [5]

7. How can the Lender's risk hypothesis explain prevailing high interest rates in the rural credit market? Briefly explain. [5]

8. Define institutions. Why are institutions critical for economic development? Answer with suitable examples. [2+2+1]

Answer **any one** question **:** [1 × 10]

9. a) Distinguish between the Lewis model and the Harris-Todaro model of rural urban migration.

   b) Suppose country A is a developing country, which is experiencing population explosion. And problem of urban unemployment is a major issue in this country. Hence the government of country A has started a program that would generate employment in urban areas. From the perspective of the Harris-Todaro model do you think this program will be successful in curbing the issue of urban unemployment? Explain your answer in detail.

   c) Suppose the country A is a democratic country then in stead of undertaking this program of creating urban employment what else the government could have done? Suppose an authoritarian one-party regime is governing this country without much democratic set up, in that case in stead of resorting to urban employment generation what other policy option the government could ponder over? [3 + 5 + 2]

10. a) What do you mean by the economic roles of the government in economic development?
    b) What are the major reasons behind government failure?
    c) Explain the emergence of rent seeking activities in this context. When are such activitiesclassified as forms of corruption? [3+3+4]

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