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## FOURTH SEMESTER B.Sc. DEGREE EXAMINATION, APRIL 2023
(CBCSS - UG)

(Regular/Supplementary/Improvement)

### CC19U MEC4 C04 - MATHEMATICAL ECONOMICS
(Statistics - Complementary Course)

(2019 Admission onwards)

Time : 2.00 Hours                                                      Maximum : 60 Marks

                                                                                    Credit : 3

**Part A** (Short answer questions)

Answer *all* questions. Each question carries 2 marks.

1. Distinguish between Theoretical and Applied Econometrics.

2. Write a short note on Simple linear regression model

3. Explain error.

4. Define the normal equations of ordinary least square estimators.

5. What are the properties of $k_i$?

6. Explain the properties of coefficient of determination.

7. What is correlation coefficient?

8. What are the properties of OLS under normality assumption?

9. What is level of significance?

10. What is one tailed and two tailed test?

11. What kind of model is used in measuring the elasticity?

12. Write a short note on reciprocal models.

                                                                        **(Ceiling: 20 Marks)**

**Part B** (Short essay questions - Paragraph)

Answer *all* questions. Each question carries 5 marks.

13. Write a short note on types of data.

14. What are the significance of stochastic distrubance term?

15. What are the numerical properties of Ordinary least squares.

16. Explain Monte carlo experiment.

17. Explain the reasons for considering normality assumptions in regression analysis.

18. Obtain $100(1 - \alpha)\%$ confidence inetrval for $\sigma^2$

19. Briefly explain regression model through the origin.

**(Ceiling: 30 Marks)**

**Part C** (Essay questions)

Answer any *one* question. The question carries 10 marks.

20. Show that $\hat{\sigma}^2$ is an unbaised estimator of $\sigma^2$

21. The following table shows the sales and advertisement expenditure of a firm.

|  | Sales | Advertisement Expenditure |
|---|---|---|
| Mean | 40 | 6 |
| S.D | 10 | 1.5 |

Coefficient of correlation $r = 0.9$. Estimate the likely sales for a proposed advertisement expenditure of Rs. 10 crores.

**(1 × 10 = 10 Marks)**

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