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K22U 2339

Reg. No. : ....

Name : ....

V Semester B.Sc. Degree (CBCSS – OBE-Regular/Supplementary/
Improvement) Examination, November 2022
(2019 Admission Onwards)
Core Course in Statistics
5B07 STA : REGRESSION TECHNIQUES AND TIME SERIES

Time : 3 Hours   Max. Marks : 48

Instruction : Calculators and statistical tables are **permitted**.

PART – A

Answer **all** questions. **Each** carries 1 mark.   (6×1=6)

1. What do you mean by a parametric function in a linear model ?

2. State Gauss Markov theorem.

3. What is meant by homoscadasticity ?

4. If simple correlation between two variables is 0.9, what will be the coefficient of determination ?

5. Give the general form of a polynomial regression model with two regressors in order 2.

6. Give an example of seasonal component in a time series.

PART – B

Answer **any 7** questions. **Each** carries 2 marks.   (7×2=14)

7. Is sample mean a BLUE for the population mean, when we take a random sample from a population with finite mean and variance ? Justify your answer.

8. How do you test a linear hypothesis in Gauss Markov setup ?

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9. What do you mean by systematic component in a regression model ?

10. What do you mean by coefficient of determination ?

11. What are residuals in a multiple regression model ? How they are useful ?

12. In a multiple linear regression model we prefer to use adjusted R^2 to the usual R^2. Why ?

13. What are multiplicative models ? Give examples.

14. What are moving averages ? Give its role in a time series analysis.

15. Give least squares method of measuring trend.

PART – C

Answer **any 4** questions. **Each** carries 4 marks.   (4×4=16)

16. Distinguish between estimation space and error space.

17. Fit a quadratic curve to the following data taking X as the independent variable.

X	1	2	3	4	5	6	7	8	9
Y	2	6	7	8	10	11	11	10	9

18. What is logistic regression ? Give its uses.

19. What are the applications of time series in real life situations ?

20. What do you mean by trend ? Explain.

21. Give the components of a time series, with proper explanation.

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PART – D

Answer **any 2** questions. **Each** carries **6** marks.   (2×6=12)

22. State and prove a necessary and sufficient condition for the estimability of a linear parametric function.

23. Derive the least square estimates of model parameters in a simple linear regression model.

24. i) How will you test the significance of regression parameters in a multiple linear regression model ?
    ii) What do you mean by a polynomial regression model ? Explain.

25. i) What are seasonal variations in a time series ? Give examples.
    ii) How will you measure seasonal variations in time series ?