LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

B.Sc. DEGREE EXAMINATION –STATISTICS

FIFTH SEMESTER – APRIL 2019

16UST5MC02 / ST 5509 – REGRESSION ANALYSIS

Date: 16-04-2019   Dept. No.   Max. : 100 Marks

Time: 09:00-12:00

PART- A

Answer ALL questions   **10X2=20**

1. What is meant by regression analysis?

2. What are the assumptions made about the explanatory variables?

3. Explain prediction in regression models.

4. Write down the need for PP plots in regression analysis.

5. What is heteroscedasticity?

6. Describe data matrix for multiple linear regression model.

7. Give an example for dummy variable in regression analysis.

8. What is an outlier?

9. Define multicollinearity.

10. List out the test procedures for studying the normality of error terms.

PART- B

Answer any FIVE questions   **5X8=40**

11. Discuss the estimation of parameters in a simple linear regression model.

12. Write a note on principle of weighted least square.

13. Describe the method of testing the significance of a subset of regression coefficients.

14. Explain how interaction effects are considered in regression models.

15. Discuss the effects of multicollinearity.

16. List down four transformations to stabilize variance in regression models and the different contexts

    for their use.

17. Explain the effects of outliers in a regression model.

18. Write a note on Kolmogrov-Smirnov test.

SECTION- C

<u>**Answer any TWO questions**</u>   **2X20=40**

19. a. Obtain least square estimators for simple linear regression model and hence show that they

    are unbiased.   **(12)**

    b. Explain QQ plot**.**   **(8)**

20. a. Describe various methods of diagnosing the problem of multicollinearity**.**   **(10)**

    b. Write a note on Anderson Darling test   **(10)**

21. Explain various methods of scaling residuals.

22. Fit a linear regression model using method of least square with the following data:

Y	10	7	5	9	12	18	10	14	16	16
X_1	7	6	4	12	10	9	14	5	7	8
X_2	10	11	7	8	4	6	9	3	12	10

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