



Date: 02-05-2025

Dept. No.

Max. : 100 Marks

Time: 01:00 PM - 04:00 PM

SECTION A

Answer ANY FOUR of the following

4 x 10 = 40 Marks

- 1) What is simple linear regression model? Using the OLS method, estimate the regression coefficients of simple linear regression model.
- 2) State and prove any two properties of regression coefficients.
- 3) Explain any one testing procedure to test for the normality of the error term.
- 4) State and prove Gauss Markov's theorem.
- 5) Explain briefly about the detection of outliers.
- 6) Graphically explain dummy variable recoding with an example.
- 7) Explain the different types of transformations used in linear models.
- 8) What is multicollinearity? How to identify the presence of it?

SECTION B

Answer ANY THREE of the following

3 x 20 = 60 Marks

- 9) Explain multiple linear regression model with an example? Derive the least square estimators of multiple linear regression model.
- 10) Explain the procedure of P-P plot and Q-Q plot.
- 11) Explain various methods of scaling residuals.
- 12) Fit a Multiple Linear Regression model to the data given below.

Job Satisfaction measure (Y)	45	35	35	40	55	50	38	55
Supervisor's Score (X ₁)	39	40	40	42	45	43	44	47
Employee Self Confidence score (X ₂)	51	51	55	57	57	61	65	64

- 13) Discuss the procedure of constructing confidence interval for slope and intercept of simple linear regression model. Also explain the testing procedure for testing the regression co-efficients.
- 14) Explain the consequences and sources of Multi collinearity.

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