Inter disciplinary 1 APPLIED STATISTICS

1. Introduction & Sampling Techniques: Frequency distribution; Mean; Standard deviation; Standard error, Skewness; Kurtosis; Definitions and Applications; Simple random sampling; Stratified sampling; Systematic sampling; Sample Size determination; Applications in Traffic Engineering,

2. Statistical Distributions:

Binomial, Poisson, Exponential and Normal distributions; Fitting of distributions; Mean and variance; Chi-square test of goodness-of-fit; Applications in Traffic Engineering.

3. Probability: Laws of Probability; Conditional probability and Independent events; Laws of expectation.

4. Regression And Correlation: Linear regression and correlation; Multiple correlation; Multiple correlation coefficient; Standard error of estimate; Analysis of Variance; Curvilinear regression; Applications in Transportation Engineering.

5. Multi Variate Data Analysis: Types of data; Basic vectors and matrices; Simple estimate of centroid, Standard deviation, Dispersion, Variance and covariance; Correlation matrices; Principal component analysis; Time series analysis.

6. Exact Sampling Distributions:

Chi-square distribution; Students T-distribution; Snedectors F-distribution.

7. Tests Of Significance & Confidence Interval - I: Large sample and small sample tests; Tests for single mean, Means of two samples, Proportions, two variances, two observed correlation coefficients, paired T-tests, Applications.

8. Tests Of Significance & Confidence Interval - Ii: Intervals for mean, variance and regression coefficients; Applications in Traffic Engineering problems.

References:

1. Basic Statistics - Simpson and Kafks; Oxford and IBH Calcutta, 1969.

2. Fundamentals of Mathematical Statistics – Gupta, S.C and Kapoor, K.V.Sultanchand.

3. Multivariate Data Analysis –Cootey W.W & Cohens P.R;John Wiley &Sons.