MT-335 Probability & Statistics

Introduction to Statistics:
Introduction, Types of Data & Variables, Presentation of Data, Object, Classifications, Tabulation, Frequency Distribution and their types, Graphical Representation, Simple, Multiple and Component bar diagrams, Pie-chart, Histogram, Frequency polygon and Frequency curves.

Measures of Central Tendency and Dispersion:
Statistical Averages, Median, Mode, Quartiles, Range, Moments, Skewness & Kurtosis, Quartile Deviation, Mean Deviation, Standard Deviation, Variance & its coefficient.

Probability:
Basic concepts, Permutation & Combination, Definitions of Probability, Laws of Probability, Conditional Probability, Bayes' Rule.

Random Variables and Random Processes:
Introduction, Discrete & Continuous Random Variables, Random Sequences and Transformations, Probability Distribution, Probability Density Function, Distribution Function, Mathematical Expectations, Moment Generating Function(M.G.F), Introduction to Random Processes and Time Series, Statistical Averages of Random Processes, Stationary, Auto-Correlation of Wide Sense Stationary Random Processes, Time Averaging, Ergodicity, Markov Chain and Queuing Theory.

Probability Distributions:
Introduction, Discrete Probability Distributions, Binomial, Poisson, Hypergeometric & Negative Binomial Distributions, Continuous Probability Distribution, Uniform, Exponential & Normal Distributions.

Sampling and Sampling Distributions:
Introduction, Population, Parameter & Statistic, Objects of Sampling, Sampling Distribution of Mean, Standard Errors, Sampling & Non-Sampling Errors, Random Sampling with & without Replacement, Sequential Sampling, Central Limit Theorem.

Statistical Inference and Testing of Hypothesis:
Introduction, Estimation, Types of Estimation, Confidence Interval, Tests of Hypothesis, Chi-Square Distribution/Test, One and Two Tails Test.

Simple Regression & Correlation:
Introduction, Scatter Diagrams, Correlation & its Coefficient, Regression Lines, Rank Correlation & its Coefficient, Probable Error (P.E).

Recommended Books

Walpole Ronald E., Introduction to Statistics, Latest edition.
Yates Roy D., Goodman David J., Probability & Stochastic Processes, A Friendly Introduction for Electrical and Computer Engineers, Latest edition.
Walpole, Myers, Myers &Ye, Probability and Statistics for Engineers and Scientist, Latest edition.
Allan G. Bluman, Elementary Statistics A step by step approach, Latest edition.
Douglas C. Montgomery, Applied Statistics and Probability for Engineers, Latest edition.