

**MMA-C112**  
**MATHEMATICAL STATISTICS**

MM : 100

Time : 3 hrs

L T P

5 2 0

Sessional : 30

ESE : 70

Pass Marks : 40

**NOTE:** The question paper shall consist of two sections (Sec.-A and Sec.-B). Sec.-A shall contain 10 short answer type questions of six marks each and student shall be required to attempt any five questions. Sec.-B shall contain 8 descriptive type questions of ten marks each and student shall be required to attempt any four questions. Questions shall be uniformly distributed from the entire syllabus. The previous year paper/model paper can be used as a guideline and the following syllabus should be strictly followed while setting the question paper.

**Probability:** Sample space and Events, Axioms of Probability, Conditional Probability, Baye's theorem, Expectations, Moments, moment generating functions, characteristic functions.

**Probability Distributions:** Random Variables, Distribution functions, Probability density function, Discrete Random Variable, Bernoulli's Distribution, Binomial Distribution, Poisson distribution (their density functions, mean, variance, moments up to fourth order)

**Continuous Distributions:** Continuous random variable, Normal Distribution, Uniform & Exponential distribution, sampling, types of Sampling, Test the significance, critical reason and level of significance, Null hypothesis, Test of hypothesis, Testing the significance of sample mean and difference between means of two samples.

Pt. Estimation, Interval Estimation, Methods of Estimation, Max Likelihood method, Method of moments, Unbiasedness, Efficiency, Consistency, Sufficiency.

Curve Fitting, methods of Least square, Simple linear regression, Assumptions, Correlation, Multiple correlation

**Text /Reference Books**

1. Miller & Johan, Freund Probability and Statistics, Prentice Hall
2. Gupta & Kapoor, Probability and Statistics, Sultan. Chand & Sons
3. M.R.Spiegel, Theory & problems of Probability, Schaum's Otlne Series
4. Ray & Sharma, Mathematical Statistics.