

MA 303 T - APPLIED STATISTICS (IE)

Teaching Scheme					Examination Scheme					
L	T	P	C	Hrs./Week	Theory			Practical		Total Marks
					MS	ES	IA	LW	LE/Viva	
3	1	---	7	4	30	60	10	---	---	100

Prerequisite:- MA 105

UNIT I – Distributions and Poisson Process **10**

Exponential distribution, Normal random variable, Distributions arising from the Normal: the Chi-square distribution, the t-distribution, the F-distribution. The Logistics distribution, Stochastic process, the Poisson process: definition of the Poisson process, Inter arrival and waiting time distribution, properties of Poisson process, distributions of sampling statistics.

UNIT II Theory of Estimation **12**

Introduction, Maximum likelihood estimators, Interval estimates: confidence interval for a normal mean when the variance is unknown, confidence intervals for the variances of a normal distributions. Hypothesis testing: Introduction, significance level, tests concerning the mean of a normal population, Hypothesis tests concerning the variance of a normal distribution, tests concerning the mean of a Poisson distribution.

UNIT III – Quality Control **10**

Introduction, control charts for average values: case of unknown μ and σ . S control charts, control charts of fraction defective. Control charts for number of defects, other control charts for detecting changes in the population mean: moving average control charts, exponentially weighted moving-average, control charts, cumulative sum control charts.

UNIT IV – Queuing theory **08**

Introduction, Cost equations, steady state probabilities, exponential models, Network of queues. The system M/G/1, the model G/M/1, Multi-server queues.

APPROXIMATE TOTAL **40 Hours**

Texts and References

1. S.C. Gupta & V.K. Kapoor, Fundamentals of Mathematical Statistics, Sultan Chand & Sons, 11th Ed.
2. Sheldon M. Ross, Introduction to Probability Models, Academic Press, 10th Ed.
3. Sheldon M. Ross, Introduction to Probability and Statistics for Engineers and Scientists, Academic Press, 4th Ed.
4. Ronald E. Walpole, Sharon L. Myers and Keying Ye, Probability & Statistics For Engineers & Scientists, 8/E, Pearson Education.
5. Feller, William, An Introduction to Probability Theory and It's Applications. Wiley India Pvt. Ltd. (2008).
6. Jay L. Devore, Probability and Statistics for Engineering and the Sciences, Cenage Learning.