SUMMARY

A Rayleigh Distribution is mainly used in physics where it is used in various types of radiation, such as sound, light and in signal processing. In this thesis, generalization of Rayleigh referred to as "Beta-Rayleigh Distribution" is generated.

Chapter 1 comprises the introduction of Beta distribution, Rayliegh distribution along with its application. Relationships of Rayliegh with other distributions have been brought into account. Some review of the transcendental functions has also been given in the chapter. The following chapter provides a brief literature review of generalized distributions.

In chapter 3 the density function of three parameter Beta-Rayleigh distribution has been generated from the logit of beta random variable. For real values of `a' the density turned out to be a Non-central Beta-Rayleigh or weighted sum of infinite Rayleigh distribution. Cumulative distribution function, its shape, hazard function and the general form of kth moment along with the first four moments have been derived. The method of Maximum Likelihood is proposed for estimating the model parameters.

The probability density function for integer values of 'a' has been derived in chapter 4. It has been turned out that density of Beta Rayleigh is a central Beta Rayleigh or weighted sum of finite Rayleigh distribution. Cumulative distribution function, its shape and hazard function have been derived. The general form of kth" moment has also been given along with the first four moments. Coefficients of Skewness and kurtosis have been given that show the Beta Rayleigh to be a highly positive skewed. Empirical study has also been carried out on the Expected value, Variance, Coefficient of Skewness and kurtosis in chapter 4 of the thesis. It has been found that parameter has an increasing effect on the mean and variance but no effect has been found on the coefficient of Skewness and kurtosis. We have also studied different effects of the parameters `a' and `b' on arithmetic mean and different measures of dispersion.