

Contribution to Ordered Random Variables

ABSTRACT of THESIS

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ABSTRACT

The present thesis entitled “**Contribution to Ordered Random Variables**” contains seven chapters.

The first chapter is the introduction of those concepts and results, which are subsequently utilized to grasp the idea of ordered random variables. This chapter consist of those ideas like order statistics, generalized order statistics, record values and other various important models of ordered random variables.

In second chapter, we deal with statistical properties of k -th upper record values for Muth distribution. This chapter deals with the recurrence relations of single and product moments of k -th upper record values established for Muth distribution and obtain its characterization using single moments of k -th upper record values. Further, the recurrence relations is established which is useful in computing the moments of higher order for Muth distribution. Its characterization also given through the recurrence relation for single moments of k -th upper record values.

In the third chapter, recurrence relations of generalized order statistics have been obtained for Kumaraswamy power function distribution. Characterization of Kumaraswamy power function distribution is also obtained which is based on recurrence relation of single moments of generalized order statistics.

In the fourth chapter, we have developed the recurrence relations for single as well as the product moments from generalized order statistics for Power Lomax distribution. Characterization result is also established for Power Lomax distribution from recurrence relation of single moments for generalized order statistics.

In the fifth chapter, we have developed the recurrence relations for single and the product moments from generalized order statistics for Sushila distribution. Special cases of the same are also discussed for order statistics and record values. Characterization results are also established for Sushila distribution from recurrence relation of single moments for generalized order statistics.

In the sixth chapter, the problem of Stress-Strength reliability model is studied. Here we consider Erlang-truncated exponential distributed stress. We have dealt with the problem by establishing the relationship among the parameters of the distributions of Stress and Strength of the manufacturing items. It is considered that the Stress follows an Erlang-truncated exponential distribution and Strength follows a power function distribution. Further, these results are explained with an example and are utilized to get optimum cost of any item when the cost function is linear in terms of parameters

In the seventh chapter, the problem of Stress-Strength reliability model is studied for Sushila distributed stress. We have studied the problem by establishing the relationship among the parameters of the distributions of Stress and Strength of the manufacturing items. It is considered that the Stress follows a Sushila distribution and Strength follows a power function distribution.