The present thesis entitled "Some Moments Problems in Generalized Order Statistics, Order Statistics and Records" is based on six chapters.

Chapter I is introductory in nature. This chapter consists of those concepts and results like order statistics, record values, generalized order statistics and lower generalized order statistics, which are used in subsequent chapters.

Chapter II deals with the single and product moments of generalized order statistics from Erlang-truncated exponential distribution $F(x) = 1 - e^{-\beta x(1-e^{-\lambda})}$, $x \geq 0$, $\beta$, $\lambda > 0$. Further, the results are deduced for moments of order statistics and record values and a characterization of this distribution has been considered on using the conditional moments of the generalized order statistics.

Chapter III contains explicit expressions and some recurrence relations for single and product moments of lower generalized order statistics from exponentiated Pareto distribution $F(x) = [1-(1+x)^{-\lambda}]^\theta$, $x > 0$, $\lambda > 0$, $\theta > 0$. Further, some of its important deductions and particular cases are discussed and two characterizing results of this distribution has been obtained using conditional moments of lower generalized order statistics and a recurrence relations for single moments.

Chapter IV is based on the explicit expressions and some recurrence relations for single and product moments of lower generalized order statistics from generalized exponential distribution $F(x) = (1-e^{-\lambda x})^\theta$, $x > 0$, $\theta > 0$, $\lambda > 0$. Further, the results are derived for moments of order
statistics and lower record values and two theorems for characterizing generalized exponential distribution are stated and proved.

Chapter V embodies exact moments and recurrence relations for single and product moments of lower generalized order statistics from exponentiated gamma distribution \( F(x) = [1 - e^{-x^\theta}(x+1)]^\theta, \quad x > 0, \quad \theta > 0 \). Further, the distribution is characterized by a recurrence relation of single moments. Also some deductions and particular cases are given.

Chapter VI is based on the recurrence relations for moment generating function of lower generalized order statistics within a class of doubly truncated distributions. Doubly truncated inverse Weibull, exponentiated Weibull, power function, exponentiated Pareto, exponentiated gamma, generalized exponential, exponentiated log-logistic, generalized inverse Weibull, extended type I generalized logistic, logistic and Gumble distributions are given as illustrative examples. Recurrence relations for moment generating function of order statistics and lower record values are obtained as they are special cases of the lower generalized order statistics. Further characterizations of this distribution based on moment generating function of lower generalized order statistics are given.

In the end, comprehensive list of references is given which have been referred by us and are relevant to our work.