Abstract

The thesis is an attempt to study some stochastic orders, associated ageing classes of lifetime distributions and their properties. Though not exhaustive, the results obtained in this thesis have the potential for further study and exploration. The thesis contains seven chapters excluding a Preface, of which the first is an introductory chapter and the second is on some reliability concepts for discrete lifetime random variables. The third chapter contains some relationships between certain classes of life distributions and some stochastic orderings, and the fourth chapter is on stochastic orderings among equilibrium, residual life at random time and some derived random variables. The fifth chapter contains a small study on NBUL (New Better than Used in Laplace ordering) class of lifetime distributions and a replacement policy comparison, and the sixth is on some bivariate reliability concepts. Finally, the seventh chapter contains a generalization of the well known $\mathcal{L}$ class of life distributions in reliability and some properties of the generalization.