

## **ABSTRACT**

In chapter I of this project, we discuss the concept of group testing. We also give a brief history of the group testing procedures and the objective of this project. In chapter II, we discuss the Optimal Dorfman Group Testing procedures. First we discuss the Dorfman-Type Group Testing for a Modified Binomial model (M model) where we present the results for both the finite and infinite populations. Here we derive an expression for the expected number of tests required to identify each unit in a group of units under the M model. We also derive an implicit solution for the optimal group sizes for the M model when the population is infinite. Also in chapter II we present two binomial group testing procedures R and which uses the halving procedures R5 and R4 respectively. In chapter III we discuss An Optimal hierarchical procedure for a Modified Binomial group testing problem which contains the Dorfman procedures as a subclass. We show that the recursive equations for an optimal hierarchical can be solved explicitly. In chapter IV we give a comparison of results of the expected number of tests needed to identify each unit as either satisfactory or defective using the group testing procedures studied in this project. The efficiencies of the group testing procedures studied in this project are also compared with those of the Dorfman and Sterrett for different values of ...