CHAPTER II

STATEMENT OF THE PROBLEM

In India, cotton fabrics are common as they are cheap and comfortable to wear in temperate climate. With the introduction of man-made fibers, the use of blends of cotton with other fibers, especially polyester, is becoming common. The increasing use of the synthetic fibers gave an initiative to develop finishing treatments for blend fabrics.

Finishing of textiles improves the utility characteristics of the fabrics. A variety of chemical finishes have been applied to different types of fabrics and for many purposes. Developments in polymer chemistry furnished a variety of resins. These are used in the finishing of textiles to increase durability and to enhance the value by imparting certain properties which the fabrics normally do not possess.

Synthetic polymers are of two main types - thermosetting and thermoplastic. Thermosetting finishes impart shrinkage control, general stabilisation and wrinkle recovery characteristics at the cost of some strength. Thermoplastic finishes impart modifications in handle, drape, resiliency and wear life but often reduce the moisture absorption. Through the use of these thermoplastic and thermosetting finishes a wide range of new properties can be thus introduced to natural and man-made fiber fabrics and their

blends.

Marsh (28) has stated that the dispersions of suitable thermoplastic polymers are capable of producing significant improvement in the resistance to abrasion, crease-recovery, tensile strength and ripping strength of textiles. Taylor and Hurwitz (48) have stated that the incorporation of more resilient and softer varieties of acrylic resin with thermo-setting resin has allowed to raise the crease angle with no additional strength loss or to maintain the same crease angle with improved strength properties.

From the literature it was noted that there is a limited information on the change in properties brought about by these finishes. It is a common practice to use thermoplastic additives as minor portion alongwith the thermosetting finishes, as major portion. Moreover little attention has been given to the application of these finishes in combination especially on the blends of cotton with polyester fibers.

It is possible that cotton and polyester blend fabrics may be given better performance characteristics when finished with optimum percentage of both the synthetic resins. Work was thus planned to study the changes in physical properties of cotton and polyester blend fabrics by the application of acrylic and DMDHEU resin finishes, alone and in combination. The specific objectives of the present study were:

1. To study the effect of different concentrations of acrylic, DMDHEU and combination finishes on wrinkle recovery of cotton and polyester blend fabrics.
2. To study the effect of different concentrations of acrylic, DMDHEU and combination finishes on tensile strength and elongation of cotton and polyester blend fabrics.
3. To study the effect of different concentrations of acrylic, DMDHEU and combination finishes on appearance rating of cotton and polyester blend fabrics.
4. To study the relationship between the changes in wrinkle recovery and the changes in tensile strength as influenced by acrylic, DMDHEU and combination finishes of cotton and polyester blend fabrics.
5. To suggest possible optimum combination of acrylic and DMDHEU finishes for cotton and polyester blend fabrics.