CHAPTER 2
RESEARCH OBJECTIVES

2.1 RESEARCH OBJECTIVES

The principal objectives of the research work described in this thesis are:

(i) an experimental investigation of swelling and stretching treatments of ring and rotor spun yarns with sodium hydroxide and zinc chloride.

(ii) an investigation of the effect of resin finishing and chemical modifications such as acetylation, benzoylation and cyanoethylation on the properties of ring and rotor spun yarns.

(iii) a study of the physical properties of yarns such as bending, buckling, compression, friction, abrasion resistance, fatigue and tensile properties of the treated products.

2.2 EXPERIMENTAL INVESTIGATION OF THE EFFECTS OF SWELLING AND STRETCHING TREATMENTS ON THE PHYSICAL PROPERTIES OF RING AND ROTOR SPUN YARNS

Many workers have studied only the effect of mercerization on the tenacity, elongation and shrinkage of ring and rotor spun yarns, and data on low stress mechanical properties such as bending, compression, abrasion, fatigue, friction and buckling are non-existent.
A search of literature shows that no one has studied the effect of swelling of ring and rotor spun yarns with zinc chloride treatment on their various physical properties.

From the published information, it would appear that the properties requiring further study are:

(i) the effect of swelling on ring and rotor spun yarns with zinc chloride and sodium hydroxide.

(ii) the effect of various treatment time of sodium hydroxide and zinc chloride on the properties of yarns.

(iii) the effect of swelling and stretching treatments on properties such as bending, buckling, compression, friction, abrasion resistance, fatigue and tensile properties.

2.3 AN INVESTIGATION OF THE EFFECT OF RESIN FINISHING AND CHEMICAL MODIFICATIONS SUCH AS ACETYLATION, BENZYLATION AND CYANOETHYLATION ON THE PROPERTIES OF RING AND ROTOR SPUN YARNS

Studies on the low stress mechanical properties of ring and rotor spun yarns are non existent and most of the reports have been limited to studies on strength. In order to secure better understanding, it is necessary to investigate these properties for the chemically modified yarns. An experimental investigation of ring and rotor spun yarns modified by various treatments has been thus undertaken. The effect of the various treatments on the properties of these yarns is analysed, and in particular an account of the measurements of their low stress mechanical properties is presented.