The author expresses her sincere thanks to Dr. N. Sridharan, Professor and Head, Department of Mathematics, Alagappa University, Karaikudi for granting permission to pursue Research in Mathematics.

The author expresses her gratitude to her research supervisor Dr. C. Ganesamoorthy, Reader in Mathematics, Alagappa University, Karaikudi for having accepted her as his student, for his valuable suggestions and encouragement throughout the period. She also expresses her heartfelt gratitude to Dr. R. Muthucumaranwamy, Professor in Mathematics, Sri Venkateswara College of Engineering, Sriperumbudur, Chennai for his excellent guidance, valuable suggestions and encouragement throughout her research career.

The author expresses her thanks to Dr. A. Gangadharan, Professor and Head, Department of Applied Mathematics, Sri Venkateswara College of Engineering, Sriperumbudur, Chennai for his valuable advice. She also expresses her sincere thanks to her friends, colleagues Dr. A. Anandavadivel and Mrs. Amutha Charu Sheela, for their valuable suggestions to overcome technical difficulties.

She is deeply indebted to the Management, Principal and the Staff of Sri Venkateswara College of Engineering for their encouragement. Finally, she expresses her deep gratitude to her mother Mrs. AN. Sivagami, her husband Mr. R. Ramachandran, her children R. Pavitra and R. Sriram for their co-operation, affection and moral support during the research work.

She dedicates this thesis to her father (Late) Mr. N. Annamalai who inspired her throughout her studies and career.