ACKNOWLEDGEMENT

The author is very grateful to his guide Dr.R.ARUMUGANATHAN, Assistant Professor, Department of Mathematics and Computer Applications, PSG College of Technology, Coimbatore, for his inspiring guidance, constant encouragement and constructive suggestion throughout this research work. The motivation rendered by him in choosing the present work and his full-fledged support for the successful completion of this research work needs special mention.

The author expresses his sincere thanks to Dr.R.NADARAJAN, Professor and Head, Department of Mathematics and Computer Applications, PSG College of Technology, Coimbatore, for his valuable suggestions, cooperation and encouragement in providing necessary facilities.

The author wishes to thank Dr.R.RUDRAMOORTHY, Principal, PSG College of Technology and Polytechnic College, Coimbatore for giving permission to use all facilities in the college without which the work would not have been completed.
The author wishes to thank MATHA AMRITANDAMAYI DEVI, Chancellor, Amrita Vishwa Vidyapeetham (Deemed University), without whose blessings this research would not have been completed. The author would like to express sincere thanks and gratitude to BRAHMACHARI ABHAYAMRITA CHAITANYA, Chief Operating Officer, Amrita Vishwa Vidyapeetham, for his assistance and the facilities provided in the course of this research work. The author expresses sincere thanks to Dr. P. VENKATRANGAN, Vice-Chancellor, Dr. N. NARAYANA PILLAI, former Principal and Director-Engineering and Dr. V. RADHAKRISHNAN, Director-Engineering for their encouragement and permitting the author to pursue part-time research programme at PSG College of Technology, Coimbatore.

The author extends his sincere thanks to Dr. G. PREMA, Chairperson, Mathematics, Amrita School of Engineering, Coimbatore, for her encouragement and help during this research apart from being kind enough to enable the author to go ahead with his research work besides regular class schedules.

The author wishes to thank Staff members of the Department of Mechanical Engineering, Amrita School of Engineering, Coimbatore,
particularly Assistant Professors Mr. K. RAMESHKUMAR and Mr. G. RAMESH, for suggesting real time examples.

The author would like to express his thanks to all the staff members in the Department of Mathematics and Computer Applications, PSG College of Technology, Coimbatore, for their kind cooperation and help rendered during the tenure of this work.

The author also thanks his research colleague Dr. K.S. RAMASWAMI, Assistant Professor, Department of Mathematics, Coimbatore Institute of Technology, Coimbatore, for useful discussions and interactions on this research work.

The author extends sincere thanks to all his colleagues in the Department of Mathematics, Amrita School of Engineering, Coimbatore, in general and in particular to Dr. J. RAVICHANDRAN, Assistant Professor, for his help during the development the thesis and to Mr. M. SIVASANKAR, Senior Lecturer, for his help in drawing the graphs for numerical results.

The author acknowledges his deep sense of gratitude and dedicates this work to his parents and family members who have always been source of inspiration to him throughout his study of research work.