

Acknowledgement

A journey is easier when you travel together. Interdependence is certainly more valuable than independence. This thesis is the result of a long journey of work whereby I have been accompanied and supported by many people. It is a pleasant aspect that I have now the opportunity to express my gratitude for all of them.

Firstly, life blessed me with the opportunity to work with my Guru, my supervisor Prof. Raju K. George. I am deeply indebted to him, for providing valuable guidance, motivation and kind encouragement with keen interest throughout the study. Words are inadequate to appreciate the knowledge, insight and patience with which he guided this work. I owe him lots of gratitude for having me shown this way of research.

I would like to dedicate this work to our parents (mother, father, mother-in-law and father-in-law) for their direct or indirect continuous support, encouragement and great inspiration to follow my dreams. My father-in-law late Dr. O. K. Shah and my father Prof. M.O.Shah were in the same profession and initially in early stage of my research they inspired me a lot. I profoundly feel that this achievement is due to their vision. I am greatly thankful to my mother-in-law Smt. Jasuben O. Shah who has been always kind enough to make me free from all social responsibilities so that I can concentrate on my work. I also take this opportunity to extend my deep sense of gratitude to my mother and father for their courageous and moral support. They taught me silently positive outlook towards life and also taught me many good things that really matter in life.

I am really lucky to have enthusiastic and caring husband like Dr. Pankaj with me. He put all his efforts in my development. I am very grateful for him, for his love and patience during the research period. Our kids matured boy Nisarg and sweet little Maahi provided an additional and joyful dimension to our life mission. I would also like to thank them for their cooperation, understanding and patience.

I am lucky to be the second of the three children of my parents. I still remember the way my "didi" guided me to mold my career and the way my younger brother gave me all kind of support. My "didi" was specially the persistent source of inspiration and was just like my shadow during this journey. There are no enough words to

express my gratitude towards her.

I am greatly thankful to the authorities of Maharaja Sayajirao University for providing me study leave to complete my mission. I also extend my sincere thanks to the department of Applied Mathematics and all the Heads under whom I worked including the current head of the department Dr. D. P. Patel for providing me all necessary resources to do my research.

I really feel proud when I think about my colleagues of the department. I sincerely thanks to all my colleagues for accepting my workload willingly and making me free. I would like to record my gratitude to Prof. S.R. Agrawal sir, Prof. V.D.Pathak sir and Prof. S. Ramamohan sir for nurturing, putting faith in me and giving me opportunity to work in various fields. I am greatly thankful to Dr. Prgnamam for her kind support, advice and guidance throughout the journey and making room and computer available for me all the time. It is difficult to quantify the help and the encouragement that I have got from Prof. N.V.Patel sir, Dr. Bankim sir, Dr. Vakaskar sir, Snehalbhai and Rajubhai. They have all been very kind and supportive to me and continuously pushed me to put my maximum to achieve this goal. I sincerely thank all of them.

Its my pleasure to thank Dr. Jaita for her great support in writing thesis. I am also grateful to Riteshbhai, Mayurbhai, Sheetal, Sumit and Mitesh for their great help in providing me books and reference papers and making me free from the journey of collecting it. I extend my thanks to Salma, Jenita, Nikhil, Ashok, Monika, Ekta, Rahul, Reena, Reshma, Ketan, Bhumika and Bharat for helping me in my critical time and always being nice to me and being ready to help me. I take opportunity to thank Jigneshbhai and Archit for their eagerness in helping me in whatever way it is possible.

I feel a deep sense of gratitude for my friend cum divine sister Dr. Eva Kaslik for her continuous kind support in providing useful references and many fruitful discussions in the topic.

I take opportunity to thank Prof. L.S. Chamayal and Dr. Bankimbhai for putting trust in me and helping me in signing bond with the university.

I would like to express my sincere thanks to all my relatives and friends, who have been a great source of motivation to me.

Last but not the least I would like to thank Faculty of Technology and Engineering and The M.S. University of Baroda for allowing me to be part of their eminent community. I also thank all the office staffs for being nice and supportive for my work.

Trupti P Shah