ACKNOWLEDGEMENT

Accomplishment is just like the tip of an iceberg, which floats in the ocean of determination, self-discipline, dedication, patience, devotion and effort. Ph. D. is just the beginning of research which never ends. Here, I feel it’s my pleasure and honor to express the words of gratitude for those who made significant contribution, both directly and indirectly towards the work presented in this thesis.

First and foremost it is a must to accept the presence of almighty God that endowed me with the strength and morale to pursue throughout the undertaken task.

I gladly utilize this opportunity to express my biggest debt of gratitude to my supervisor Dr. Sanjeev Sharma, Department of Mathematics, Jaypee Institute of Information Technology, Noida, without whose everlasting encouragement, constructive criticism, numerous suggestions and fruitful discussion, the completion of this study would not have been possible.

I would like to express my sincere and humble gratitude to Prof. Alka Tripathi, Head, Department of Mathematics and renowned teacher Prof. Bani Singh, Former Head, for their valuable guidance and support. I would like to thank Prof. R. C. Jain, Head, Department of ECE, Prof. A. K. Aggarwal and Dr. B. P. Chamola, members of DPMC for their evaluation and valuable suggestions during my presentations. I am also thankful to entire faculty members of the Department of Mathematics for their valuable and fruitful suggestions throughout my studies.

It is my great pleasure to acknowledge my gratitude to Prof. S.C. Saxena, Vice-Chancellor, Prof. Padam Kumar, Dean (RID), Prof. Krishna Gopal, Dean (A&R) and Mr. Raju Sangal, Registrar for their constant support and infrastructural facilities provided for my research work at Jaypee Institute of Information Technology, Noida.

I am grateful to JIIT Noida for providing me the financial support during my research work. I express my heartfelt thanks to the Librarian of JIIT and all other staff members of library for allowing me to use the available resources for my work.

I am thankful to all my seniors, colleague and juniors, who contributed directly or indirectly towards my research work. Let me also express how glad I am, that all of my friends, namely Kuldip Katiyar, Shikha Maheshwari, Rekha, Deepti Maikhuri, Prateek Varshney, Pradeep Jha
and Vineet Tiwari are part of my life. You were here for me when I needed a good laughter and a piece of advice. A special thanks to my batchmate Kuldip Katiyar for extending his kind help whenever I required.

Words are not enough to express my deep sense of gratitude and indebtedness to my die hard loving and caring parents who is the source of everlasting faith, inspiration and blessings and parent-in-law for their continuous support and cooperation to accomplish this task.

I express my heartiest adoration to my elder sisters, younger sister and brother for their blessings, love, care and favors as their greatest support in each aspect. A special thanks to all my Jijus for their support, encouragement and generous help and loving niece Tanya and nephews Samar, Kartik and Ayaan who always undergone various compromises and inconveniences in summer and winter vacations at nanu’s home for my studies.

Last but not the least, I owe great heart-felt gratitude to my husband Mr. Vikas Yadav for his continuous support and care from the beginning to end. Because of my research he had to undergo lots of unavoidable compromises and inconveniences to explain this words are not sufficient. This thesis would not have been executed without the blessings, support and efforts of all the people mentioned above.

(Sanehlata)