Acknowledgements

First and foremost, I would like to express my heartiest appreciation and deep sense of gratitude to my supervisors Dr. Ashok K Chitkara, Hon’ble Chancellor, Chitkara University, Himachal Pradesh and Prof. H. C. Taneja, Department of Applied Mathematics, DTU, Delhi for their immeasurable encouragement and insightful guidance which inspired me at each stage of present research work. I am fortunate enough for being their student and associated with them in research field. It is through their sincere efforts, suggestions and kind help, that I am able to complete the present work. Their constant motivation has been a source of inspiration from beginning of present research work and will remain so in future.

I am obliged to Dr. Madhu Chitkara, Pro Chancellor, Chitkara University, Himachal Pradesh, Dr. Virender Kanwar, Registrar, Chitkara University, Himachal Pradesh and Dr. Rajnish Sharma, Dean Academics, Chitkara University, Himachal Pradesh, for providing me the necessary facilities and kind support needed to carry out the present research work. Thanks are also due to the staff of examination and library for their kind cooperation.

The inspiring help and constant motivation from Dr. Sudhir Mahajan, Dean R&D, Chitkara University, Himachal Pradesh and Dr. Vikas Kumar, Department of Applied Sciences, UIET, M.D.U., Rohtak, Haryana during the course of my work is greatly acknowledged.

I am greatful to Dr. Sita Ram Sharma, Head, Department of Applied Sciences, Mr. Ravi Datt, Dr. Sushil Kumar, Dr. Sunil Kumar, Dr. Ishwar Dutt, Mr. Tapas Sharma, Dr. Madhu Gupta and other faculty members of Department of Applied Sciences, for their sincere and kind cooperation during these years. I also acknowledge the help and cooperation from my fellow researchers Ms. Shefali Batra and Ms. Neha Kumra during the course of my work.
Special thanks to my wife Manisha and son Pushkar, without their sacrifice, patience and persistent encouragement this work could not be completed.

Last, but not the least, I am highly indebted to my grandmother, parents, parents-in-law, younger sister and her family whose kind cooperation, moral support, encouragement and blessings helped me during the course of work.

Date:

(Ashok Kumar)