Several people have made a significant contribution, both directly and indirectly towards the research work presented in my thesis. At the very outset, I would like to express my biggest debt of gratitude to my esteemed supervisor Dr. Amrish Kumar Aggarwal, who has provided the inspiring guidance throughout the work. His influence on this thesis has been profound right from the beginning till the end. It has been a great pleasure for me to work under his supervision. I also express my deepest gratitude to Prof. Bani Singh, Head, Department of Mathematics, for his valuable and consistent guidance from time to time. I have been benefitted in several ways through his inexhaustible reservoir of knowledge. I am also thankful to Prof. B. D. Sharma, Prof. G. S. Srivastava, Dr. Alka Choubey, Dr. B. P. Chamola, Dr. Sanjeev Sharma and other faculty members of the Department of Mathematics, for their valuable suggestions and encouragement during the course of this work. Special thanks are due to Dr. R. K. Diwedi, Department of Physics, for his help through valuable comments and constructive criticism of the findings reported in the thesis. The frequent consultation and enlightening discussion with him have made this work a successful venture.

I am thankful to Dr. Y. Medury, Chancellor and COO-Education, Prof. S.C. Saxena, Vice-Chancellor, Prof. Krishna Gopal, Dean (A&R) and Col. Vijay Kumar, Registrar for providing all facilities during my research work.

I would also like to extend my gratitude to the Library of Jaypee Institute of Information technology and its staff for allowing me to use the available resources for my work.

I shall be failing in my duty if I do not express sincere thanks to my beloved parents and other family members for their loving care, constant encouragement and moral support throughout my work. Finally, I owe my heart-felt gratitude to my husband Mr. D. K. Makhija and my daughters, Ishita and Nikita, who had to undergo lot of inconveniences at times, though unavoidable, because of my involvement in research. I appreciate them for making my motivation level high during this research work. Words hardly suffice the support they provided during the whole course of my study.

I express heart-felt thanks to my supervisor again for the pains-taking efforts he has put in checking this work through in shortest possible time, in spite of his busy schedules.