Acknowledgement

This thesis is the result of meticulous work whereby I have been accompanied and supported by many people. I am fortunate that I now have the opportunity to express my gratitude to all those who helped me to complete this thesis truly.

The first person I would like to profoundly thank is my supervisor Prof P K Kapur to whom I am deeply indebted for constantly providing his overly integral view on this research and his mission of giving 'only high-quality work and not less'. His sincere help, stimulating suggestions and encouragement helped me all through my research and consequently in the correct documentation of this thesis. Besides being an excellent supervisor, he had been conferring valuable hints to improve my work. His wide knowledge and his logical way of thinking have been of great value for me. His understanding, encouraging and personal guidance have provided a good basis for the present thesis. He has been a father figure and has always helped me in every possible way. It has been a blessing of God to have him as my guide.

I would like to extend my deepest thanks to my second supervisor Dr. Anu G Aggarwal for her time, patience, trust and support. Her valuable teachings, advices and cooperation have truly made my experience as a research scholar memorable. I would like to thank her in particular for being with me in my rough times.

I would also like to gratefully acknowledge the valuable help of my wife, Mahdieh Ahmadi who persistently supported during my research. Her confidence and strength throughout my educational career has been incredible. In particular, I would like to thank my parents, brother and sisters for their unconditional love, endless patience and seemingly unlimited belief when it was most required. Gratitude also goes to MrAli Torabi and Robabeh Ahmadi, Dr Golamreza Abbaszadeh and Maryam Torabi for supporting me during this period.

I would like to specially thank to Dr Ompal Singh and Prof Sunil Kumar Khatri for support throughout this period of research.
I would also like to thank Head of Department of Operational Research and all the faculty members for their time assistance.

I special thank to Dr. Sadreddin Motevali, the Vice Chancellor of Islamic Azad University-Nour Branch who encourages me to continue my research career.

I wish to extend my warmest thanks to Prof. Uday Kumar and Dr. Alireza Ahmadi who have provided me visit Lulea University of Technology in Sweden as Visiting PhD Student with financial Support. They provided friendly help and timely advice.

During this work I collaborated with many associates too for whom I have great regard. I thank my seniors, Dr. Abhishek Tandon, Dr. Gurjeet kaur.

I would earnestly thank and congratulate my very close friend, Jytish N.P Singh, Adrash Anand, Dr. Vijay Kumar, Nitin Sachdeva, Dr Ali Viyani, Dr Habibollah Kashiri, Dr Masoumeh Younesabadi and Naser Soltanpoor.

The chain of my gratitude would be definitely incomplete if I would forget to thank the almighty God, The Prime Mover.

Amir Hossein Soleiman Garmabaki