ACKNOWLEDGEMENT

I bow before THE ALMIGHTY for all the blessings.

I deem it a rare privilege to extend my deep sense of gratitude and thankfulness to Dr. Manoj Changat for his inspiring guidance, encouragement and support throughout the course of this work. I consider it as a great boon to have Dr. Manoj Changat, an eminent mathematician of international reputation as my research supervisor.

Let me place on record my sincere gratitude to Dr. B. Kannan, Reader, Department of Computer Applications, CUSAT, Kochi, for his timely guidance and constant interest in the progress of this work.

I acknowledge my heartfelt thankfulness to Prof. Sandi Klavžar, Department of Mathematics, University of Ljubljana, Slovenia, Prof. Boštjan Brešar, Department of Mathematics and Computer Science, University of Maribor, Slovenia, Prof. Istok Pterin, Dr. Simon Špacapan, Dr. Matjaž Kovše and Dr. Aleksandra Tepeh of the research group in Discrete Mathematics in University of Maribor, for their sincere help and discussions during the research work, which proved invaluable in course of this endeavour.

I am extremely grateful to Dr. V. Nanda Mohan, Dean, Faculty of Applied Sciences, University of Kerala, for his seamless motivation.

I wish to record my sincere thanks to Dr. G.N. Prasanth, Sr. Lecturer, Department of Mathematics, Govt. College Palakkad, for providing technical support with LaTeX, and to Smt. Anandavally K. L., Sl.Gr. Lecturer, Department of Mathematics, Mar Ivanios College, Thiruvananthapuram and FIP Teacher Fellow, Department of Futures Studies, for correcting the proof.

I wish to make a special mention for the help and encouragement from Dr. Joseph Mathews, Former Head, Department of Mathematics, S.B. College, Changanachery, Dr. Antony Mathews, Sl.Gr. Lecturer, Department of Mathematics, S.B. College, Changanachery, and Mr. Bijo S Anand, Research Fellow, Department of Futures Studies.

I register my discerning gratitude to Dr. S. Raju, Reader, School of Social
Sciences, M. G. University, Kottayam, for his erudite suggestions and constructive criticisms.

I express my sincere thanks to Mr. Sanal Kumar S. P., Sr. Systems Analyst, Department of Futures Studies, for his adequate support.

My thanks are also due to the administrative staff and Librarian of Department of Futures Studies and the staff of Kerala University Library.

I sincerely express my gratitude to the Secretary N. S. S Colleges' Central Committee, Changanachery for granting me study leave to complete this doctoral work. I am thankful to Dr. B Sudheendran Pillai, Principal, faculty members and staff, N.S.S College, Rajakumary, for the timely support and encouragement given to me.

At a very personal level, I am most grateful to my dear family members for their patience and encouragement and friends for their support during the period of study.

Ajitha R.S