ACKNOWLEDGEMENT

At the outset I thank God, The Almighty for His abundant blessings through Lord Jesus Christ, my ‘Guru par excellence’.

I would remain deeply indebted to my research guide Dr. I. Sahul Hamid, Assistant Professor, Department of Mathematics, The Madura College, Madurai for his efficient guidance in my studies. His intellectual acumen, command over the subject, crisp and clear articulation of ideas, constructive comments, cordial approach, patience and sincerity played a major role in bringing out the thesis in its present form. Each discussion session was of great value for me as it challenged me to learn more and helped me refine my thinking skills.

My sincere thanks to Rev. Dr. (Fr.) Thomas C. Mathew, the Vice-Chancellor, Christ University for his creative vision, magnanimity in empowering people and passion for excellence which made it possible for me to be a ‘Christite’ in the twin roles of a faculty and a student.

I am grateful to Rev. Dr. (Fr.) Abraham V.M., the Pro-Vice Chancellor and Director, Center for Research, Christ University for having encouraged me to pursue research studies in graph theory and helping me with valuable suggestions.

I would also like to thank Dr. S. Srikantaswamy, Additional Director, Center for Research, Christ University for being a good mentor and for the meticulous follow-up of the research programme that helped me to complete the study in a time bound manner.

I express my sincere thanks to Dr. (Fr.) Thomas Aykara CMI, the Chancellor; Fr. Varghese K.J, the Chief Finance Officer, Prof. J. Subramanian, Registrar, Dr. N.M. Nanjegowda, Dean of Sciences, Prof. K.A. Chandrashekaran, Personnel Officer and Prof. T.V. Joseph, Head of the Department of Mathematics for their support during the course of my study.
I express my sincere gratitude Dr. B.D. Acharya, former advisor, DST, Govt. of India for his valuable comments on the work and the constructive suggestions for further studies.

A key ingredient for the timely submission of this work was the amazing support given to me by my fellow sisters Ms. Annie Poriyath and Ms. Annamma Mathew, the valuable help from my friend Geeta and the technical support by Rajitha Reddy. I thank them all with gratitude.

As I tread through the valleys of darkness on this journey of research, the love, prayers and blessings of two people played a crucial role in helping me keep going. They are my beloved parents. This thesis is a testament of the power of their prayers and blessings.

Thanks to all my colleagues from the departments of Mathematics and Statistics for their good wishes, to my siblings for their love, to all my friends and well-wishers for their support, and to the ADMA group of Bangalore for their monthly informal group discussions (MIGD) that gave me some valuable insight into the process of research.

I would be failing in my duty if I do not mention the cooperation extended by Dr. R. Murali, Principal, The Madura College, Madurai and Prof. S. Thiagarajan, Head, Department of Mathematics, The Madura College, for my studies by allowing me to utilize the facilities provided by the College for the research scholars in Mathematics.

Words are inadequate to express my gratitude to Dr. Mercy Pushpalatha, Principal, Lady Doak College, Madurai and her family who provided me a wonderful home and an excellent ambiance for intensive study during my stay in Madurai.

I am indeed blessed to be a vertex of degree $(n - 1)$ in a graph of a large order $n$ in the network of relationships comprising of so many wonderful people who were instrumental for me to reach this stage of learning.

**TO ONE AND ALL . . . A BIG THANK YOU!!!**