Acknowledgements

I express my heartfelt humble gratitude to my revered teacher, mentor, philosopher, source of inspiration and supervisor, Dr. D.G. Wakde, Principal, S.S.G.M. College of Engineering, Shegaon and Dean, Faculty of Engineering Technology, S.G.B. Amravati University, for his perceptive observation, penetrating comments, insightful suggestions and personal care which have created confidence in me. I am thankful to him for his infectious research enthusiasm, the invaluable support, guidance, and encouragement he has provided me during my research. I am very much beholden to him for his loving interests in me even his engagement as Principal and Dean.

I would like to express my deepest appreciation to Dr. R.K. Shevgaonkar, Professor and Head Electrical Engineering Department, Indian Institute of Technology Bombay, Mumbai, who, with great intelligence and incredible work ethic, provided me with intellectual help for my research work. I am very much thankful to him for his kind help during my stay at Indian Institute of Technology Mumbai.

I am grateful to Prof. R.D. Kanphade, Head Electronics and Telecommunication Engineering department of S.S.G.M. College of Engineering Shegaon for providing me the necessary facilities to carry out my research work and helping me in several ways.

I am thankful to Dr. T.V.S. Arunmurthy for broadening my knowledge in the research fields, and for his sharp scientific intuition, meticulous scholarship and warm heartedness, which have profoundly influenced me.

I also appreciate Prof. C.G. Dethe, for his kind support in writing this thesis.

My most sincere and heartfull thanks to my parents Shri Shankarrao Kawitkar and Sau. Parvatibai Kawitkar for their unyielding faith, sacrificial love, guidance, support, patience and encouragement over the years that have been very stimulus for my development.

I thank God for looking over me during these past years and for granting me the ability to complete this degree.