ACKNOWLEDGEMENT

It is my great privilege to express my profound and sincere gratitude to my respected Project Supervisor and Research Guide Prof. S.C. Bera for his valuable guidance, motivation and encouragement. Working with him on the present study has been a very rewarding and pleasurable experience that has greatly benefited me throughout the course of work.

My special thanks and deep regards to the present and former Heads of the Department of Applied Physics, University of Calcutta for providing me the laboratory facilities throughout my research work. I would also like to pay my deep regards and grateful thanks to Prof. T.K. Mitra, Prof. D.K. Basu, Prof. S.K. Sen, Dr. M. Mitra and other Teachers of the Instrumentation Engineering and Electrical Engineering Sections of the Department of Applied Physics, University of Calcutta and Prof. S.K. Ghosh, Ex-Professor, Jadavpur University, for several invaluable discussions, suggestions during my work.

I recall and remember, with affection and gratitude, my deep association with my friends and research colleagues Dr. J.K. Roy, Dr. S. Chattopadhyay, Dr. B. Chakraborty, Mr. M. Mandal, Mr. R. Sarkar, Mrs. N. Mandal and Mr. M. Bhowmick along with all technical staffs of the Departments of Applied Physics, for their valuable assistance during my research work.

I wish to thank Prof. A. Nath for providing his active help in carrying out my research work. I also remember my colleagues Dr. Arghya Sarkar, Dr. Parimal Acharya, Ms. Jayita Dutta, Mr. Krishnendu Chatterjee and others for their invaluable association with me.

I must acknowledge MHRD and AICTE, Govt. of India for providing financial assistance to develop and fabricate various systems for experimental studies during Ph.D work.

Finally I would like to express my passionate gratitude to my father, my mother and my wife for their active assistance, constant source of inspiration and encouragement.

Dhritinandan Kole