I am very grateful to Dr. Abhijit Sen for his consistent and careful supervision of the work presented in this thesis. The enthusiasm and sense of involvement provoked by Dr. Sen contributed immensely to the progress of this work.

To Professor A.C. Das I extend my heartfelt thanks for initiating me into the field of Plasma Physics and also for the encouragement and help rendered at various stages during the course of the work. I would like to acknowledge with a deep sense of gratitude the inspiration and guidance extended by Professor P.K. Kaw at various stages of this work. I have benefited immensely through his close contact which has provided new dimensions to my career. Professor S.P. Pandya's kindness, sustained interest and helpful disposition deserves special thanks.

My sincere thanks are due to Messrs. P.N. Guzdar, Y.S. Satya and P.K. Chaturvedi who graciously devoted their precious time in constructive and fruitful discussions with me throughout the course of this work. Thanks are due to Dr. A.K. Sundaram for critical reading of the manuscript and also to Professors K.H. Bhatt, B. Buti, R.K. Varma and R. Pratap for taking keen interest in this work.
I wish to extend my sincere thanks to my colleagues and friends Messrs. V. B. Kamble, B. N. Goswami, M. Sinha, A. S. Sharma, V. H. Gandhi, D. Bora, B. G. Anand Rao and Dr. S. K. Sharma for innumerable and stimulating discussions I had with them and for their constant encouragement and kind co-operation. It is from this young and active group that I have benefited most in various aspects of life. I would like to thank Professor B. L. K. Somayajulu, Dr. S. Krishnaswami, Mrs. Nanda Krishnaswami and Mrs. Arundhati Das for their co-operation and friendly attitude. I am also thankful to Messrs. M. Chakraborty, M. Mohan and A. Ambastha for helping me in the final stages of the thesis.

With a heavy heart, I recall the days I spent in the wonderful company of my friend and colleague, late Jayarama Rao. Rarely one comes across such a brilliant, sober and amiable personality. Discussions with him always added towards the understanding of the subject and were always lively and instructive.

I am thankful to the Education Department, Government of Assam for granting me leave, from my parent job, to finish this work and to the University Grants Commission for their financial assistance.

My sincere thanks go to Mr. A. A. Ramachandran for agreeing to undertake the painstaking job of typing the manuscript. The subsequent pages bear testimony to the