ACKNOWLEDGEMENT

I have been highly privileged to get an opportunity to work under the supervision of my respected guide Prof. S. A. S. Ahmed, Professor, Department of Physics, Gauhati University. I am deeply indebted to him for inspiring guidance, parental patronage, ceaseless encouragement and selfless help at the time of crisis during the study. Indeed he has been my friend, philosopher and guide in need.

I convey my sincere gratitude to Prof. N. Nimai Singh, Head, Department of Physics, Gauhati University for his kind help, encouragement and sincere support in presenting the thesis.

I sincerely acknowledge the unstinted support, valuable suggestions and helps extended by Prof. D. K. Choudhury, Professor, Department of Physics, Gauhati University, Prof. Kalyanee Baruah, Professor, Department of Physics, Gauhati University, Prof. A. Rahman, Professor, Department of Physics, Gauhati University. I also express gratefulness to all the faculty members of the Department of Physics, Gauhati University for their moral support in presenting the work.

I am grateful to Prof. K. D. Krori, former Principal of Cotton College, Guwahati, and Prof. P. Borgohain, former Professor of Physics, Cotton College, Guwahati for their contribution towards new ideas. Their relentless persuasions, warm appreciation during initial stages of the work were an inexhaustible source of strength and inspiration for me.

It is also a pleasure to express my sincere thanks to my co-worker Dr. Dipali Das Kar, Head, Department of Physics, Pandu College, Guwahati for assistance and collaboration during my work.

My parents and parents-in-law have been the source of unflagging inspiration and encouragement which sustained me throughout the whole course of this work.

Pradip Kumar Kar

(Pradip Kumar Kar)