

Acknowledgements

At the very outset, I would like to express my profound gratitude and sincere thanks to my respected guide Dr. Dilip Datta, Professor, Department of Mechanical Engineering, Tezpur University, for his invaluable supervision, guidance and constructive suggestions throughout the course of this work and particularly for his diligent scrutiny and correction of the thesis.

I would like to extend my gratitude towards all the faculty members of the department for their kind co-operation and encouragement which helped me in successful completion of the thesis.

I wish to extend my sincere thanks to the institute authority, especially the personnel of the Mechanical Engineering Department, for providing the required facilities.

My thanks and appreciations also go to my friends in carrying out the thesis and people who have willingly helped me with their abilities.

Sandeep Kumar Vishwas

Dedicated to my

Parents, teachers and friends

