ACKNOWLEDGEMENTS

It is with a sense of profound gratitude that I express my sincere thanks to Dr. J. Fazlur Rahman, Professor Emeritus, Mechanical Engineering, H.K.B.K.C.E., Bangalore, and Dr. A. Ramesh, professor and Head, Mechanical Engineering, S.K.C.E.T., Coimbatore, for their moral inspiration, encouragement, invaluable guidance and suggestion throughout the course of research work and preparation of this report. This study would not have been possible but for their help and support at every stage before and during the study.

I sincerely thank the members of Doctoral Committee, for their valuable suggestions. I also take this opportunity to thank Chairman, Director, Administrator, Principal and HOD and all the faculty of Mechanical Engineering, H.K.B.K.C.E., Bangalore, for the inspiration, encouragement and all possible help extended which enabled me to carry out the research work without any difficulty.

I am extremely thankful to my parents, in-laws and all family members who have helped me in shaping my career and I am also very grateful to my Wife and Child for bearing with all the difficulties during my research work.

I also thank one and all who helped me in carrying research work at Anna University of Technology, Coimbatore, Tamilnadu.

MOHAMMED YUNUS