ACKNOWLEDGEMENT

I would like to express my profound appreciation to my supervisor Prof. Prabhat Kumar Singh Dikshit, for his continuous assistance and valuable advice throughout this research work. Words cannot explain this teacher-pupil relation. Sir, thank you. Your simplicity and attitude of "helping all" always encouraged me to learn the different aspects of life in a positive way.

I would also like to thank to my co-supervisor, Dr. Shyam Bihari Dwivedi who implicitly trained me about Mathematical Modeling in order to achieve a Non-Linear model for the River Ganga. He has been a remarkable advisor who guided me to easily comprehend this aspect of thesis through research, guidance and inspiration with his day-to-day invaluable inputs.

I am thankful to Prof. Devendra Mohan, Head of the Department of Civil Engineering, Banaras Hindu University for his support, advice, inspiration and for a pleasant working atmosphere in the Department.

I am very thankful to Prof. P. K. Singh, of Civil Engineering, Indian Institute of Technology, Banaras Hindu University for his very useful discussions and continuous support.

I would also like to thank Dr. Prabhakar Singh, of Applied physics Department, Indian Institute of Technology, Banaras Hindu University for his remarkable suggestions in mathematical modelling of River Ganga

I am thankful to Ex. Prof. U. K. Choudhary, of Civil Engineering, Banaras Hindu University for his Continuous support, advice and inspiration.

IIT (BHU) [i]

I am grateful to Associate Professors Dr. K. K. Pandey, Dr. Rajesh Kumar and Dr. S. Mondal from the Civil Engineering Department for giving me crucial time and support when I was stuck in the mathematical modeling of the River Ganga.

I also wish to thank all the teaching and non-teaching staff of the Department of Civil Engineering for their cooperation and help.

I would also like to thank to my Seniors, Dr. Ajay Kumar, Dr. K. Narayan, Dr. V. Khatri and Dr. S. M. Singh, colleagues Mr. Amit Pandey, Mr. A. K. Rahul, Mr. V. Kumar, Sudhakar Singh and Mr. Nitesh Singh and Juniors, Mr. S. Shekhar, Mr. G. J. Singh, Mr. Ravi Prakash Tripathi, Mr. Abhishel Lal, Mr. P. S. Rathore and Mr. Harsad for their helpful and needy suggestions for better quality of work.

I wish to extend the deepest sense of respect to my mother for instilling in me confidence and a drive for pursuing my education and for the support that she has provided me through my entire life.

In particular, I would like to thank my father, for his attention, understanding and support during development of this study. He has always stood by me as the pillar of my life.

Heartiest thanks to my sister Ms. Kalpana Singh, my sister-in law Dr. Vinita, my brothers, Dr. R. S. Chauhan, Mr. Pankaj Singh, Mr. Piyush Shukla, Mr. Amit Kumar Singh Dikshit and Mr. B. S. Chauhan, whose constant encouragement enabled me to complete this work.

Lastly and above all, I am deeply grateful to the invisible yet helping hands of Lord Shiva, with which He has helped me graduate onto the next step of journey into my life.

Manvendra Singh Chauhan

IIT (BHU) [ii]