The shortest solution for any problem is to minimize the distance between your forehead and the floor. Those who bow down to ALLAH can stand up to anything....

I bow my head in utmost gratitude for showering me with the blessings and guidance which enabled me to tread on the right path. I thank ALMIGHTY for each and everything.

Honorific is the pleasure of expressing a deep sense of gratitude to my supervisor, Prof. Qayyum Husain, Department of Biochemistry, Faculty of Life Sciences, Aligarh Muslim University, Aligarh, for his constant encouragement, sustained interest and parental care throughout the course of this investigation. It was a great privilege to work under the brightness of his supervision and encouragement that has instilled in me a more disciplined and enthusiastic attitude towards research. I appreciate all his contributions of ideas, time and funding to make my PhD experience productive and stimulating. The joy and enthusiasm he has for research was contagious and motivational for me. I am inspired by the excellent example he has provided as a successful enzymologist and professor.

I extend my sincere gratitude to Prof. Bilqees Bano, Chairperson of Department of Biochemistry, Aligarh Muslim University, Aligarh, for providing all the necessary facilities to the Department. I acknowledge the moral support and help provided by my teachers and mentors - Prof. S.M. Hadi, Prof. Masood Ahmed, Prof. Naheed Bano, Prof. Imran Naseem, Prof. Riaz Mahmoed, Dr. Fahim Halim Khan, Dr. M. d. Tabish, Dr. Farah Khan and Dr. Aabgeena Naeem.

Dr. Saleem Javed, Associate Professor, Jamia Hamdard, New Delhi is deeply appreciated for his timely help, critical suggestions and friendly nature which helped me in completing this work smoothly and successfully. I shall always be indebted to him for his dynamic and valuable guidance that directed me to follow the path to seek success with whatever little knowledge I am blessed with.

My humble thanks are due to Dr. Toshiha Haider and Dr. Mahreen Matto for their valuable help and support. I extend my deep thanks to Dr. Zoheb Karim for his infinite affection and inspirational discussion on various matters. The encouragement, patience and faithful support rendered by Dr. Rukhsana Satar during my PhD is deeply appreciated. Whatever I have taken from them, it was too much; it wasn’t an exact amount. The exact amount doesn’t suit me.

My time at Aligarh was made enjoyable in large part due to many friends and groups that became a part of my life. I am grateful for the time spent with roommates and friends, for
my backpacking buddies and our memorable trips into the mountains, historical places and temples as I finished up my degree, giving me more than enough to go down the memory lanes and cherish those golden moments. I am especially grateful to the fun group of batchmates—Iftekhar, Taqi, Rayees, Bilal, Badar, Anni, Humaira, Raafia, Sarah, Shahia and Nida. It was a treasured pleasure to work with them. "A memory last forever, never does it die, true friends stay together and never say goodbye."

I owe my heartfelt thanks to my seniors (Dr. Medha Priyadarshani, Dr. Shams Tabrez, Dr. Shahnawaz Khan, Dr. Ashraf, Dr. Aaliya Shah, Dr. Mohd Aatif) and juniors (Kaiser, Husain, Haseeb, Raouf, Shoa, Binish, Uzma, Naveed, Shafqat, Ashreeb, Shirin, Samreen, Afshan, Dilnasheen, Maria and Sana) for their humble and active cooperation.

Uncountable thanks to Abrar (for always being in constant touch through long phone calls and paying special concern to my problems), Rabbani (for being soft-spoken, humble, supportive and caring) and Zaheer (for knowing me more than myself) deserves to be mentioned. I have appreciated the camaraderie and local expertise of Salman, Rajesh, Sunny, Asrar, Ashfaaq, Anas, Varun and Wajahat for their continuous encouragement and support. It was a great pleasure to work with the summer/rotation students, Nisar, Zaakir, Zaigham, Zeeshan, Furqan, Farhaan, Aazam, Sayeed, Ahmed, Tariq, Aamir(s), Fahad and Zeba.

My “more than infinite” thanks to the simplest, quietest and magnificent person, whom I didn’t mention here by name; my idol’s tongue won’t be able to thank him throughout my life. Without his constant motivation, 24x7 help and forgiving attitude, I don’t know how could I have folded the things........

Lastly, I would like to thank my family for their love and encouragement. For my parents, who raised me with a love of science and supported me in all my pursuits. It sent shivers down my spines to have a feeling of remaining away from the substances while grasping the shadows, to remain away for long without having the glimpse of the cute and innocent but pain relieving face of my sister, Zoya and my nephews and nieces—Talha, Fatima, Amaan, Zunairah, Arham, Saamia, Tahura, Rehman and Armish.

“I am a part of all that I have met with, Thanks to each and everyone.”

(Shaheed Ahmed Ansari)