

Acknowledgments

I wish to express my sincere appreciation and gratitude to ***Prof. Effat Abbas Saied*** *Professor of Applied Mathematics, Faculty of Science, Benha University*, for his continuous guidance, precious advice, real support and valuable supervision.

I would to express my deep appreciation and gratitude to ***Dr. Mohamed Abd El-Moniem Rabie*** *Associate Professor of Operations Research, Faculty of Science, Benha University*, for his continuous help, valuable supervision, precious advice and continuous encouragement.

I would to express my sincere thanks and deep appreciation to ***Dr. Mahmoud Ibrahim Moussa*** *Lecturer of computer Science, Faculty of Computers and Information, Benha University*, for suggesting the research plan, his valuable supervision and his continuous encouragement.

Also I am really grateful to ***the staff members*** of *Mathematics Department, Faculty of Science, Benha University*, for their support.

Finally my deep appreciation and gratitude to ***my father, my mother and my sisters*** for their kind help, their continuous encouragement and support to keep going through this work.