CHAPTER 8

CONCLUSION

In this thesis, various optimization problems in Fuzzy and Intuitionistic Fuzzy environment are studied. First of all we generalize certain concepts in fuzzy sets to introduce Intuitionistic Fuzzy Quantity (IFQ) and introduced a general linear non-membership function to introduce IF maximizing/minimizing set which is not the complement of the membership function. This IF maximizing/minimizing set is used in the optimization problems in an IF environment.

Linear Programming Problem with single and multiple objective functions in the IF environment is studied first. The IF maximizing/minimizing set used in the solution yields a higher degree of satisfaction and found more suitable in the context of problems with so much vagueness. This is illustrated with the help of examples.

Transportation Problems with single and multiple objectives in the IF environment are considered next. The proposed general linear non-membership function is found to be better suited for general Intuition-
istic Fuzzy Transportation Problems (IFTP). The claim is established with the help of an example.

A general method for solving Multiple Objective Programming Problems with Interdependence in the IF environment is obtained. Application functions are introduced to both the membership and non-membership functions of the objectives separately. Here also we could achieve solution with higher degree of satisfaction.

Linear Programming Problems with logical variables are analyzed in the IF environment as Approximate Reasoning Schemes and formulated a general model for Intuitionistic Fuzzy Linear Programming (IFLP) problems as Intuitionistic Fuzzy Multiple Reasoning Schemes (IFMR).

Finally, a new algorithm to solve Fuzzy Transportation Problem (FTP) and Multi-Objective Fuzzy Transportation Problem (MOFTP) with vagueness and degree of satisfaction varied from 0 to 1 is obtained using the S-curve membership function. We illustrate with examples that the S-curve membership function works better with FTP and MOFTP in terms of best solutions for the objective(s).
The author does not claim that the study made in this thesis is a complete exposition in all respects, rather there are various problems connected with this work in both theory and application worth investigating. As is often found any investigation opens up new areas for further study.

8.1. Problems for further investigation

A few problems worth investigating are given below

(1) Optimization of Linear Programming Problems using IF numbers

(2) Optimization of Non-Linear Programming Problems in IF environment

(3) Finding general non-linear membership and non-membership functions for the IFO problems

(4) Applications in Engineering, Market and Management fields.

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