



*Summary and
Conclusion*

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Today it is obvious that fuzzy topology and many related theories have and will have a fundamental play in applied sciences.

Eversince the introduction of fuzzy sets by Zadeh,L.A., [26], several authors have worked on this concept and the theory of fuzzy sets has developed in many directions and is finding applications in a wide variety of fields.

Ordered sets and ordered topological spaces play a dominant role in the study of fuzzy mathematics.

This thesis is devoted to the study of some interesting results on topological ordered spaces, proximity ordered spaces, preference ordered spaces, ordered fuzzy topological spaces and fuzzy topological ordered vector spaces

The first chapter deals with preliminary definitions and results.

In the second chapter some fundamental definitions related to topological ordered spaces are given. I-continuous, D-continuous, B-continuous, I-open, B-open, D-open, I-closed, D-closed and B-closed maps for topological ordered spaces are introduced and studied. Using the concept of x -continuous maps ($x = I, D, B$), the concept of x -homeomorphisms ($x = I, D, B$), is introduced. For all these maps the interrelations, compositions and characterization theorems are analysed.

Chapter III deals with separation axioms in topological ordered spaces. The following separation properties of range spaces under some of the

mappings x -continuous, x -open, x -closed and x -homeomorphism ($x = I, D, B$) are examined:

- 1) Strongly T_i -ordered ($i = 1, 2, 3, 4$)
- 2) Strongly regular ordered
- 3) Strongly normally ordered.

Chapter IV is devoted to the study of proximity ordered spaces. Using quasi-proximity as a primitive concept, Singal, M.K., and Sundar Lal., introduced the notion of proximity ordered spaces and proved that quasi-proximities are related to completely regular ordered spaces of Nachbin.

Topological properties of spaces ordered by preferences are studied in the fifth chapter. Interesting characterizations of these spaces are given.

Chapter VI is devoted to the study of ordered fuzzy topological spaces. In the first section of this chapter, fuzzy ordered sets are defined and some properties of these sets are studied. In the second section of this chapter, ordered fuzzy topological spaces are defined and analysed.

Chapter VII deals with separation axioms in ordered fuzzy topological spaces. FT_i -order separation axioms ($i = 1, 2, 3, 4$) for fuzzy topological ordered spaces are introduced and studied. The relationship between some of the FT_i -order separation axioms are analysed. Regularly ordered spaces and normally ordered spaces are also studied.

Chapter VIII is devoted to the study of fuzzy topological ordered vector spaces. In this chapter some interesting properties of fuzzy topological ordered vector spaces are studied.