ABSTRACT

The thesis deals mainly with fuzzy topological spaces, intuitionistic fuzzy topological spaces, fuzzy topological groups, intuitionistic fuzzy topological groups, fuzzy translation invariant spaces, intuitionistic fuzzy translation invariant spaces, intuitionistic fuzzy numbers and applications of fuzzy mathematics.

In chapter 1, the preliminaries of the fuzzy sets, intuitionistic fuzzy sets, fuzzy topological spaces, intuitionistic fuzzy topological spaces and the brief outline of the thesis are discussed.

In chapter 2, a new notion of fuzzy translation invariant space is introduced and the relation with the existing notions of translation invariant space and the properties of the fuzzy translation invariant topological space are studied.

In chapter 3, a new notion of an intuitionistic fuzzy translation invariant space is introduced. The relations with the existing notions of translation invariantness are studied. The properties of an intuitionistic fuzzy translation invariant topological space are enhanced from fuzzy translation invariant topological spaces.
In chapter 4, the notion of strong fuzzy topological group has been introduced by allowing the points of proposed strong fuzzy topological groups to the fuzzy singleton of a given group with the help of induced topology. Some properties of strong fuzzy topological groups have been studied by analyzing each entity as its connection with previous notions, subgroups, images and products of strong fuzzy topological groups.

In chapter 5, the notion of strong intuitionistic fuzzy topological group has been introduced. The properties of the strong intuitionistic fuzzy topological group have been enhanced from strong fuzzy topological groups.

Finally in chapter 6, a normal triangular intuitionistic fuzzy number is defined. A new method of intuitionistic fuzzy scoring to an intuitionistic fuzzy numbers has been enhanced from Chen and Hwang’s (1992) scoring method for ranking fuzzy numbers. This new ranking method includes the concept of both membership and non-membership scores of the given intuitionistic fuzzy number.