Notification No: 522/2022
Date of Award: 12/10/2022

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Topic of Research: Some Aspects of Ideals in Different Algebraic Structures

Abstract:

In Abstract Algebra, the concept of ideals, quasi-ideals, bi-ideals and (m, n)-ideals are well known. A lot of work has been done on these ideals including soft set theory and hyperstructure theory. However the studies on fundamental structures of Γ-semihypergroups in terms of soft set theory, and soft set operations applied to Hypernear-rings and Γ-Hypernear-rings etc. remained untouched. Therefore a need was felt to study these along with multi-polar fuzzy set theory of ordered semigroups.

In Chapter one, some basic definitions, examples and results which are needed to prove the results in the subsequent

Chapter two is devoted to the study of bi-bases of ordered ternary semigroups and bi Γ-ternary semigroups. We define quasi-order relation of ordered ternary semigroup and study some of their properties.

In Chapter three, we apply the theory of multi-polar fuzzy set (m-pF set) to ordered semigroups and introduce the notions of m-pF bi-ideals, m-pF quasi-ideals and m-pF ideals. We have shown that m-pF quasi ideals are m-pF bi-ideals, but the converse statement is not true.

Chapter four deals with soft algebraic hyperstructures, which are generalizations of soft algebraic structures. The concept of soft generalized interior Γ-hyperideals and soft generalized bi- Γ-hyperideals of Γ-semihypergroups are introduced.

In Chapter five, we define ternary semihypergroups with involution (briefly, *-ternary semihypergroup). We explore some properties using involution theoretic concepts in ternary semihypergroups for soft hyperideals and soft hyperfilters.

Chapter six, we introduce soft intersection hypernear-ring and shows that how a soft set effects on a hypernear-ring structure by means of intersection and insertion of sets. Also, we define the cross product of two soft intersection hypernear-rings.

In Chapter Seven, we have collected the findings and conclusions of the Chapters of the thesis. Also, we have discussed the future work that can be done on these structures.

In the end, a comprehensive bibliography with the author's name in alphabetical order is given enlisting books and papers which have been referred to in the thesis.