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ABSTRACT

Quasi-ideals in semiring have been investigated by Steinfeld, O. in [1956] This is verified that the intersection of left ideal and right ideal of a semiring S is a Quasi-ideal of S. The notion of bi-ideals is generalization of the concept of Quasi-ideals. By a bi-ideal of semigroup(ring) S we shall mean a subsemigroup (semiring) B of S such that BSB⊆B By Clifford A.H.in [1978].The idea of Bi-ideals is further generated in (m,n) ideals,first defind by Lajos, S. in [1961].. The notion of gamma semiring was introduced by M. Murali Krishna Rao as a generalization of gamma ring as well as semirings. Some definitions and Lemma have been used in the thesis to prove the results.

A semirings S is defined as an algebra (S, +, .) such that (S, +) and (S, .) are semigroups connected by $a(b + c) = ab + ac$ and $(b + c)a = ba + ca$ for all a, b, $c \in S$. Let S be a semiring and suppose that A is a subset of S which is additively closed. If a, b$\in A$ then a+b$\in A$. A is said to be quasi-ideal iff A$S \cap SA \subseteq A$.

An additive sub semigroup I of a Γ-semiring *S* is called a left (right) Γ-ideal of *S* if $S\Gamma I \subseteq I (I\Gamma S \subseteq I)$. If *I* is a both a left and a right ideal then *I* is called a two-sided ideal or simply an ideal of *S*. A subgroup Q of (S, +) is said to be a quasi-Γ-ideal of S if Q$\Gamma S \cap S\Gamma Q \subseteq Q$. A quasi- Γ-ideal Q of a Γ-semigroup S is called a minimal quasi-ideal of S if Q does not properly contain any quasi-Γ-ideal of S.

A semiring S is said to be regular if for every element a$\in S$ there exist some x, y$\in S$ such that a+axa=aya. Reguler semiring is always a 1-reguler semiring..

By using the above concepts we investigate the following results which have been introduced in my thesis.

Minimal conditions of Quasi-Γ-ideals in semirings as well as in gamma semirings. If L be a minimal left ideal of a gamma semiring S and R be a minimal right ideal of S, then $R \cap L$ is either zero or minimal quasi-Γ-ideal of S.

Bi-Γ-ideal in Γ-semirings and quasi-ideals in semiring. If S be a Γ-semiring and B is a bi-Γ-ideal of S with $\cap B \neq \emptyset$. Then $\cap B$ is a bi- Γ-ideal of S. We found that for a non-empty subset A of a Γ-semiring S,

$$A = A \cup A\Gamma A \cup A\Gamma S\Gamma A.$$

Generalization the concepts of quasi-ideals for regular semirings. The properties of quasi-ideals of regular semirings holds true for 1-regular semiring. If a regular semiring satisfies the intersection property then it is regular if and only if it is semiprime.