DEVELOPMENT OF SMARANDACHE FUZZY SUBSET OF SEMIGROUPS AND ITS PROPERTIES WITH EXAMPLES

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1. INTRODUCTION & OBJECTIVE

In 1965 (ZADEH, 1965), Zadeh's pivotal notion of a fuzzy set provided sharp insights and applications in various scientific domains. Many publications published after that date proved the idea's necessity and usefulness. Rosenfelddeveloped several results from groups and expanded them to ambiguous groups. He also proposed the notation of fuzzy groups (A.ROSENFELD, 1971). : Semigroup theory is an enormous subject of Algebra, and its applications are in coding, automata, and many computer languages. A.K Sushkewitch Russian mathematician, developed the Semigroup theory and its classes. Then Clifford generated regular semigroups in 1941 and gave results with inverse elements. Later Preston and Clifford described inverse semigroups. Wu researched conventional fuzzy subsemigroups. Rosenfeld further demonstrated that the fuzzy subgroup's homomorphic image is one. Subsequently, Anthony and Sherwood should have used properties while working on fuzzy homomorphism (Kehayopulu, 2005). Mukherjee and Bhattacharya first developedthe perception of fuzzy\vague cosets and their relationship in fuzzy normal subgroups. (]. M.Shabir). John N Mordesonand D S Malik developed many theorems and results published in one book by World Scientific Publishing. This paperused fuzzy subset notation as ζ and semigroup as Ṡ. We explored the new concept in the fuzzy semigroup with two propositions, four results, and three examples. Enhanced SMARANDACHE fuzzy semigroup with bids and results also gave the best examples using their properties.

We developed many propositions. In that one of that is, if ζ, ϕ are fuzzy/vague subsets of semigroup Ṡ then ζ Θ ϕ is also an unclear/vague semigroup of Ṡ, and ζ Θϕ is also afuzzy/vague semigroup of Ṡ. A fuzzy/vague left or right ideal ζ of semigroup Ṡ is also a fuzzy/vague idempotent semigroup Ṡ. This we can prove easily by using the definitions of the fuzzy/vague left or right ideal of semigroups.

2. RESULTS & HIGHLIGHTS OF IMPORTANT POINTS

Here I mention some results which we found in my investigation.

1. Let Ṡ be a p- semigroup; for every fuzzy/vague right ideal ζ_1 and ζ_2 of Ṡ then, the following are equivalent.

    1) $\zeta_1 \Lambda \zeta_2 \leq \zeta_1 \Theta \zeta_2$

    2) $(\zeta_1 \Lambda \zeta_2)' \geq (\zeta_1 \Theta \zeta_2)'$

2. Every fuzzy/vague regular semigroup Ṡ is a fuzzy/vague subset of ideal semigroup Ṡ.

3.If ζ_1 and ζ_2 are the fuzzy/vague semigroups of Ṡ, then $\zeta_1 \wedge \zeta_2$ is also a fuzzy/unclear semigroup.

Based on these results, we showed many examples and implemented them in many areas like Automata theory.

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