Anti-Fuzzy Soft Subhemiring of a Hemiring

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Abstract

In this paper, we made an endeavor to consider the logarithmic idea of an anti-fuzzy soft subhemirings of a hemiring.

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INTRODUCTION:

There are numerous ideas of all inclusive algebras summing up a cooperative ring (R; +; .). Some of them specifically, nearrings and a few sorts of semirings have been demonstrated extremely valuable. Semirings (called likewise halfrings) are algebras (R; +; .) spread an indistinguishable properties from a ring with the exc\eption of that (R ; +) is thought to be a semigroup instead of a commutative group. Semirings show up in a characteristic way in a few applications to the hypothesis of automata and formal dialects. A polynomial math (R ; +, .) is said to be a semiring if (R ; +) and (R ; .) are semigroups fulfilling a. (b + c) = a. b + a. c and (b + c) .a = b. a + c. a for every one of the a, b and c in R. A semiring R is said to be additively commutative if a + b = b + a for every a, b and c in R. A semiring R may have an identity 1, characterized by 1. a = a = a. 1 and a zero 0, characterized by 0 + a = a = a + 0 and a. 0 = 0 = 0. a for every \ a in R. A semiring R is said to be a hemiring in the event that it is an additively commutative with zero. After the presentation of Fuzzysets by L.A. Zadeh [17], a few analysts investigated on the speculation of the idea of Fuzzysets. M. Borah, T. J. Neog and D. K. Sut,[5] were produced a few operations of Fuzzysoft sets, On operations of soft sets was created by A.Sezgin and A. O. Atagun,[13] and KumudBorgohain and ChittaranjanGohain,[7] was produced some New operations on Fuzzy Soft Sets. In this paper , we present the idea of anti- fuzzy soft subhemirings of a hemiring.

1. PRELIMINARIES

1.1 Definition: A couple (F,E) is known as a soft set (over U) if and just if F is a mapping of E into the arrangement of all subsets of the set U.

As it were, the soft set is a parameterized group of subsets of the set U. Each set F(ε)(εϵE) from this family might be considered as the arrangement of ε - components of the soft sets (F, E) or as the arrangement of ε - surmised components of the soft set.

1.2 Definition: Let (U,E) be a soft universe and A ⊆ E. Give F(U) a chance to be the arrangement of every single Fuzzy subset in U. A couple ($\tilde{F}$, A) is known as a Fuzzy soft set over U, where $\tilde{F}$ is a mapping given by $\tilde{F}$: A → F(U).

1.3 Definition: Let (R , + , .) be a hemiring. A Fuzzy soft subset (F,A) of R is said to be a anti- Fuzzy soft subhemiring (AFSSHR) of R on the off chance that it fulfills the accompanying conditions:

$\mu_{(F,A)}(x_{(F,A)} + y_{(F,A)}) \leq \max\{ \mu_{(F,A)}(x_{(F,A)}), \mu_{(F,A)}(y_{(F,A)}) \}$,

$\mu_{(F,A)}(x_{(F,A)}y_{(F,A)}) \leq \max\{ \mu_{(F,A)}(x_{(F,A)}), \mu_{(F,A)}(y_{(F,A)}) \}$, for all $x_{(F,A)}$ and $y_{(F,A)}$ in R.

1.4 Definition: Let (R , + , .) be a hemiring. An anti-fuzzy soft subhemiring (F,A) of R is said to be an anti-Fuzzysoft normal subhemiring(AFSNSHR) of R if

$\mu_{(F,A)}(x_{(F,A)}y_{(F,A)}) = \mu_{(F,A)}(y_{(F,A)}x_{(F,A)})$, for all $x_{(F,A)}$ and $y_{(F,A)}$ in R.

1.5 Definition: Let (F,A) and (G,B) be Fuzzysoft subsets of sets G and H, individually. The counter result of (F,A) and (G,B), signified by (F,A)x(G,B), is characterized as

$(F,A)x(G,B) = \{ \langle (x_{(F,A)}, y_{(G,B)}), \mu_{(F,A)x(G,B)}(x_{(F,A)},y_{(G,B)}) \rangle$ / for all $x_{(F,A)}$ in G and $y_{(G,B)}$ in H },

where $\mu_{(F,A)x(G,B)} (x_{(F,A)}, y_{(G,B)}) = \max\{\mu_{(F,A)}(x_{(F,A)}),\mu_{(F,B)}(y_{(G,B)})\}$

1.6 Definition: Let (F,A) be a Fuzzy soft subset in a set S, the anti-strongest Fuzzy soft connection on S, that is a Fuzzy soft relation on (F,A) is (G,V) given by

$\mu_{(G,V)}(x_{(F,A)}, y_{(F,A)}) = \max\{ \mu_{(F,A)} (x_{(F,A)}), \mu_{(F,A)} (y_{(F,A)}) \}$, for all $x_{(F,A)}$ and $y_{(F,A)}$ in S.

1.7 Definition: A anti Fuzzy soft subhemiring (F,A) of a hemiring R is called an anti- Fuzzy soft trademark subhemiring of R if

$\mu_{(F,A)} (x_{(F,A)}) = \mu_{(F,A)}(f(x_{(F,A)}))$, for all $x_{(F,A)}$ in R and f in Aut (R).

1.8 Definition: Let (R, +, ·) and (Rǀ, +, ·) be any two hemirings. Let $f : R \rightarrow R^{\prime}$ be any capacity and (F,A) be a anti Fuzzy soft subhemiring in R, (G,V) be an anti-Fuzzy soft subhemiring in $f(R) = R^1$, characterized by

$\mu_{(G,V)} (y_{(G,V)}) = \inf_{x\in f^{-1}(y)} \mu_{(F,A)} (x_{(F,A)})$, for all $x_{(F,A)}$ in R and $y_{(G,V)}$ in $R^{\prime}$. At that point (F, A) is known as a preimage of (G,V) under f and is meant by $f^{-1}(V)$.

1.9 Definition: Let (F, A) be an anti fuzzy soft subhemiring of a hemiring (R, +, ·) and a in R. At that point the pseudo anti fuzzy soft coset $(a(F,A))^p$ is characterized by

$((a\mu_{(F,A)})^p)(x_{(F,A)}) = p(a)\, \mu_{(F,A)} (x_{(F,A)})$, for every $x_{(F,A)}$ in R and for some p in P.

1.10 Definition: Let (F,A) and (G,B) be two soft sets over a typical universe U.The union of (F,A) and (G,B) is characterized as the soft set (H,C) fulfilling the accompanying conditions: (i) C=A∪B (ii) For all x ∈ C,

$$H(x) = \begin{cases} F(x) & if\ x \in A - B, \\ G(x) & if\ x \in B - A, \\ F(x) \cup G(x) & if\ x \in A \cap B, \end{cases}$$

This is denoted by (F,A) $\tilde{\cup}$ (G,B)=(H,C)

1.11 Definition: Let (F, A) be a anti –fuzzy soft subhemiring of a hemiring R. At that point $(F, A)^0$ is characterized as $(F, A)^0(x_{(F,A)}) =(F,A) (x_{(F,A)}) /(F,A)(0)$,for all $x_{(F,A)} \in R$

2 .ANTI- FUZZY SOFT SUBHEMIRING OF A HEMIRING

2.1 Theorem: Union of any two anti fuzzy soft subhemiring of a hemiring R is anti-Fuzzysoft subhemiring of R.

Proof: Let (F,A) and (G,B) be any two anti-fuzzy soft subhemirings of a hemiring R and $x_{(F,A)}$ and $y_{(G,B)}$ in R. Let $(F,A) = \{ (x_{(F,A)}, \mu_{(F,A)} (x_{(F,A)})) / x_{(F,A)}\in R \}$ and $(G,B) = \{ (x_{(G,B)}, \mu_{(G,B)} (x_{(G,B)})) / x_{(G,B)}\in R \}$ and furthermore Let $(H,C) = (F,A) \cup (G,B) = \{ (x_{(H,C)}, \mu_{(H,C)}(x_{(H,C)})) / x_{(H,C)}\in R \}$, where $\max\{ \mu_{(F,A)} (x_{(F,A)}), \mu_{(G,B)} (x_{(G,B)}) \} = \mu_{(H,C)}(x_{(H,C)})$

It is clear the $[(F,A) \cup (G,B)](x)= (F,A)(x)$ When $\mu_{(F,A)} (x_{(F,A)})\neq 0$ and $\mu_{(G,B)} (x_{(G,B)}) =0$

Additionally, $[(F,A) \cup (G,B)](x)= (G,B)(x)$ When $\mu_{(F,A)} (x_{(F,A)})=0$ and $\mu_{(G,B)} (x_{(G,B)}) \neq 0$.

It is sufficient to demonstrate that $[(F,A) \cup (G,B)](x)=\max\{\mu_{(F,A)} (x_{(F,A)}), \mu_{(G,B)} (x_{(G,B)}\}$, Now, $\mu_{(H,C)}(x_{(H,C)} + y_{(H,C)}) = \max \{ \mu_{(F,A)} (x_{(F,A)}+y_{(F,A)}), \mu_{(G,B)} (x_{(G,B)} +y_{(G,B)})\} \leq \max\{\max \{\mu_{(F,A)} (x_{(F,A)}), \mu_{(F,A)} (y_{(F,A)})\}, \max \{\mu_{(G,B)} (x_{(G,B)}), \mu_{(G,B)} (y_{(G,B)})\}\} = \max\{\max\{ \mu_{(F,A)} (x_{(F,A)}), \mu_{(G,B)}(x_{(G,B)}) \}, \max\{\mu_{(F,A)} (y_{(F,A)}), \mu_{(G,B)} (y_{(G,B)})\}\}= \max \{ \mu_{(H,C)} (x_{(H,C)}), \mu_{(H,C)} (y_{(H,C)}) \}$.Therefore, $\mu_{(H,C)} (x_{(H,C)} + y_{(H,C)}) \leq \max \{ \mu_{(H,C)} (x_{(H,C)}), \mu_{(H,C)} (y_{(H,C)}) \}$, for all $x_{(F,A)}$ and $y_{(G,B)}$ in R. Also, $\mu_{(H,C)} (x_{(H,C)}y_{(H,C)}) = \max \{ \mu_{(F,A)} (x_{(F,A)}\ y_{(F,A)}\ ), \mu_{(G,B)} (x_{(G,B)}y_{(G,B)}) \} \leq \max\{\max\{$

$\mu_{(F,A)}(x_{(F,A)})$, $\mu_{(F,A)}(y_{(F,A)})\}$, max$\{\mu_{(G,B)}(x_{(G,B)}), \mu_{(G,B)}(y_{(G,B)})\}$ = max{ max { $\mu_{(F,A)}(x_{(F,A)})$, $\mu_{(G,B)}(x_{(G,B)})$ }, max { $\mu_{(F,A)}(y_{(F,A)})$, $\mu_{(G,B)}(y_{(G,B)})$} = max{ $\mu_{(H,C)}(x_{(H,C)})$, $\mu_{(H,C)}(y_{(H,C)})$ }.

In this way, $\mu_{(H,C)}(x_{(H,C)}y_{(H,C)}) \leq \max\{ \mu_{(H,C)}(x_{(H,C)}), \mu_{(H,C)}(y_{(H,C)}) \}$, for all $x_{(F,A)}$ and $y_{(G,B)}$ in R.Therefore (H,C) is an anti-fuzzy soft subhemiring of a hemiring R.

Hence the union of any two anti-fuzzy soft subhemirings of a hemiring R is an anti-fuzzy softsubhemiring of R.

2.2 Theorem: The union of a group of anti- fuzzy soft subhemirings of hemiring R is an anti- fuzzy soft subhemiring of R.

Proof: Let { (F,V_i) :i∈I} be a group of anti fuzzysoft subhemirings of a hemiring R and let (F,A) = $\bigcup_{i\in I} V_i$ .Let $x_{(F,A)}$ and $y_{(F,A)}$ in R.Then, $\mu_{(F,A)}(x_{(F,A)} + y_{(F,A)}) = \sup_{i\in I} \mu_{(F, Vi)}(x_{(F,A)} + y_{(F,A)}) \leq \sup_{i\in I} \max\{ \mu_{(F, Vi)}(x_{(F,A)}), \mu_{(F, Vi)}(y_{(F,A)}) \}$, = max { $\sup_{i\in I} \mu_{(F, Vi)}(x_{(F,A)})$, $\sup_{i\in I} \mu_{(F, Vi)}(y_{(F,A)})$ } = max{ $\mu_{(F,A)}(x_{(F,A)})$, $\mu_{(F,A)}(y_{(F,A)})$ }.Therefore, $\mu_{(F,A)}(x_{(F,A)} + y_{(F,A)}) \leq \max\{ \mu_{(F,A)}(x_{(F,A)}), \mu_{(F,A)}(y_{(F,A)})\}$, for all $x_{(F,A)}$ and $y_{(F,A)}$ in R. And,$\mu_{(F,A)}(x_{(F,A)}y_{(F,A)}) = \sup_{i\in I} \mu_{(F, Vi)}(x_{(F,A)}y_{(F,A)}) \leq \sup_{i\in I} \max\{ \mu_{(F, Vi)}(x_{(F,A)}), \mu_{(F, Vi)}(y_{(F,A)}) \}$ = max{ $\sup_{i\in I} \mu_{(F, Vi)}(x_{(F,A)})$, $\sup_{i\in I} \mu_{(F, Vi)}(y_{(F,A)})$ } = max{ $\mu_{(F,A)}(x_{(F,A)})$, $\mu_{(F,A)}(y_{(F,A)})$ }.Therefore, $\mu_{(F,A)}(x_{(F,A)}y_{(F,A)}) \leq \max\{ \mu_{(F,A)}(x_{(F,A)}), \mu_{(F,A)}(y_{(F,A)}) \}$, for all $x_{(F,A)}$ and $y_{(F,A)}$ in R..That is, (F,A) is a anti Fuzzysoft subhemiring of a hemiring R. Subsequently, the union of a group of anti–fuzzy soft subhemirings of R is an anti- fuzzy soft subhemiring of R.

2.3 Theorem: If (F, A) and (G,B) are any two anti-fuzzy soft subhemirings of the hemirings R_1 and R_2 separately, at that point anti-product (F,A) x(G,B) is an anti-fuzzy soft subhemiring of R_1xR_2.
Proof: Let (F, A) and (G, B) be two anti-fuzzy soft subhemirings of the hemirings R_1 and R_2 respectively. Let $x_{(F,A)1}$ and $x_{(F,A)2}$ be in R_1, $y_{(G,B)1}$ and $y_{(G,B)2}$ be in R_2.Then ($x_{(F,A)1}$, $y_{(G,B)1}$) and ($x_{(F,A)2}$, $y_{(G,B)2}$) are in R_1xR_2. Now, $\mu_{(F,A)x(G,B)}[(x_{(F,A)1}, y_{(G,B)1}) + (x_{(F,A)2}, y_{(G,B)2})] = \mu_{(F,A)x(G,B)}(x_{(F,A)1} + x_{(F,A)2}, y_{(G,B)1}+ y_{(G,B)2}$, = max { $\mu_{(F,A)}(x_{(F,A)1}+ x_{(F,A)2})$, $\mu_{(G,B)}(y_{(G,B)1}+ y_{(G,B)2})$ }≤ max{max{$\mu_{(F,A)}(x_{(F,A)1})$,$\mu_{(F,A)}(x_{(F,A)2})$},max{$\mu_{(G,B)}(y_{(G,B)1})$,$\mu_{(G,B)}(y_{(G,B)2})$}} = max{max{$\mu_{(F,A)}(x_{(F,A)1})$,$\mu_{(G,B)}(y_{(G,B)1})$},max{$\mu_{(F,A)}(x_{(F,A)2})$, $\mu_{(G,B)}(y_{(G,B)2})$}} = max{ $\mu_{(F,A)x(G,B)}(x_{(F,A)1}, y_{(G,B)1})$, $\mu_{(F,A)x(GxB)}(x_{(F,A)2}, y_{(G,B)2})$ }.Therefore, $\mu_{(F,A)x(G,B)}[(x_{(F,A)1}, y_{(G,B)1})+(x_{(F,A)2},y_{(G,B)2})]$ ≤max{$\mu_{(F,A)x(G,B)}(x_{(F,A)1},y_{(G,B)1})$,$\mu_{(F,A)x(G,B)A}(x_{(F,A)2},y_{(G,B)2})$}.Likewise,$\mu_{(F,A)x(G,B)}[(x_{(F,A)1},y_{(G,B)1})(x_{(F,A)2},y_{(G,B)2})]$=$\mu_{(F,A)x(G,B)}(x_{(F,A)1}x_{(F,A)2},y_{(G,B)1}y_{(G,B)2})$=max{$\mu_{(F,A)}(x_{(F,A)1}x_{(F,A)2})$,$\mu_{(GxB)}(y_{(G,B)1}y_{(G,B)2})$},≤max{max{$\mu_{(F,A)}(x_{(F,A)1})$,$\mu_{(F,A)}(x_{(F,A)2})$},max{$\mu_{(GxB)}(y_{(G,B)1})$,$\mu_{(GxB)}(y_{(G,B)2})$}} =max{max{$\mu_{(F,A)}(x_{(F,A)1})$, $\mu_{(GxB)}(y_{(G,B)1})$}, max{$\mu_{(F,A)}(x_{(F,A)2})$, $\mu_{(GxB)}(y_{(G,B)2})$}} = max{ $\mu_{(F,A)x(G,B)}(x_{(F,A)1}, y_{(G,B)1})$, $\mu_{(F,A)x(G,B)}(x_{(F,A)2}, y_{(G,B)2})$ }.Therefore, $\mu_{(F,A)x(G,B)}[(x_{(F,A)1}, y_{(G,B)1})(x_{(F,A)2}, y_{(G,B)2})] \leq \max\{ \mu_{(F,A)x(G,B)}(x_{(F,A)1}, y_{(G,B)1}), \mu_{(F,A)x(G,B)}(x_{(F,A)2}, y_{(G,B)2})\}$. Subsequently (F,A) x(G,B) is an anti-fuzzy soft subhemiring of hemiring of R_1xR_2.

2.4 Theorem: Let (F,A) be a Fuzzysoft subset of a hemiring R and (G,V) be the most grounded anti Fuzzysoft connection of R. At that point (F,A) is a anti- fuzzysoft subhemiring of R if and only if (G,V) is an anti-fuzzysoft subhemiring of RxR.

Proof: Suppose that (F,A) is an anti-fuzzy subhemiring of a hemiring R.Then for any x = ($x_{(F,A)1}$, $x_{(F,A)2}$) and y = ($y_{(F,A)1}$, $y_{(F,A)2}$) are in RxR.We have, $\mu_{(G,V)}(x_{(G,V)}+ y_{(G,V)}) = \mu_{(G,V)}[(x_{(G,V)1}, x_{(G,V)2}) + (y_{(G,V)1}, y_{(G,V)2})] = \mu_{(G,V)}(x_{(G,V)1}+ y_{(G,V)1}, x_{(G,V)2}+ y_{(G,V)2})$ = max { $\mu_{(F,A)}(x_{(F,A)1} + y_{(F,A)1})$, $\mu_{(F,A)}(x_{(F,A)2}+ y_{(F,A)2})$ ≤ max { max { $\mu_{(F,A)}(x_{(F,A)1})$, $\mu_{(F,A)}(y_{(F,A)1})$ }, max { $\mu_{(F,A)}(x_{(F,A)2})$, $\mu_{(F,A)}(y_{(F,A)2})$} = max{ max { $\mu_{(F,A)}(x_{(F,A)1})$, $\mu_{(F,A)}(x_{(F,A)2})$ }, max { $\mu_{(F,A)}(y_{(F,A)1})$, $\mu_{(F,A)}(y_{(F,A)2})$}= max{ $\mu_{(G,V)}(x_{(G,V)1}, x_{(G,V)2})$, $\mu_{(G,V)}(y_{(G,V)1}, y_{(G,V)2})$ },= max{ $\mu_{(G,V)}(x_{(G,V)})$, $\mu_{(G,V)}(y_{(G,V)})$ }.Therefore, $\mu_{(G,V)}(x_{(G,V)} + y_{(G,V)}) \leq \max\{ \mu_{(G,V)}(x_{(G,V)}), \mu_{(G,V)}(y_{(G,V)}) \}$, for all $x_{(F,A)}$ and $y_{(F,A)}$ in RxR.And, $\mu_{(G,V)}(x_{(G,V)}y_{(G,V)}) = \mu_{(G,V)}[(x_{(G,V)1}, x_{(G,V)2})(y_{(G,V)1}, y_{(G,V)2})] = \mu_{(G,V)}(x_{(G,V)1}y_{(G,V)1}, x_{(G,V)2}y_{(G,V)2})$ = max { $\mu_{(F,A)}(x_{(F,A)1}y_{(F,A)1})$, $\mu_{(F,A)}(x_{(F,A)2}y_{(F,A)2})$ } ≤ max { max{ $\mu_{(F,A)}(x_{(F,A)1})$, $\mu_{(F,A)}(y_{(F,A)1})$}, max{ $\mu_{(F,A)}(x_{(F,A)2})$, $\mu_{(F,A)}(y_{(F,A)2})$} = max{ max { $\mu_{(F,A)}(x_{(F,A)1})$, $\mu_{(F,A)}(x_{(F,A)2})$ }, max{ $\mu_{(F,A)}(y_{(F,A)1})$, $\mu_{(F,A)}(y_{(F,A)2})$}= max{ $\mu_{(G,V)}(x_{(G,V)1}, x_{(G,V)2})$, $\mu_{(G,V)}(y_{(G,V)1}, y_{(G,V)2})$= max{ $\mu_{(G,V)}(x_{(G,V)})$, $\mu_{(G,V)}(y_{(G,V)})$}.Therefore, $\mu_{(G,V)}(x_{(G,V)}y_{(G,V)}) \leq \max\{ \mu_{(G,V)}(x_{(G,V)}), \mu_{(G,V)}(y_{(G,V)})\}$, for all $x_{(G,V)}$ and $y_{(G,V)}$ in RxR. This demonstrates that (G,V) is a anti fuzzysoft subhemiring of RxR. On the other hand expect that (G,V) is an anti-fuzzy soft subhemiring of RxR, at that point for any x x = ($x_{(G,V)1}$, $x_{(G,V)2}$) and y = ($y_{(G,V)1}$, $y_{(G,V)2}$) are in RxR, we have max{ $\mu_{(F,A)}(x_{(F,A)1}+ y_{(F,A)1})$, $\mu_{(F,A)}(x_{(F,A)2}+ y_{(F,A)2})$ } = $\mu_{(G,V)}(x_{(G,V)1}+ y_{(G,V)1}, x_{(G,V)2}+ y_{(G,V)2})$= $\mu_{(G,V)}[(x_{(G,V)1}, x_{(G,V)2}) + (y_{(G,V)1}, y_{(G,V)2})]$= $\mu_{(G,V)}$

$(x_{(G,V)}+ y_{(G,V)}) \leq \max\{ \mu_{(G,V)} (x_{(G,V)}), \mu_{(G,V)} (y_{(G,V)}) \} = \max\{ \mu_{(G,V)} (x_{(G,V)1}, x_{(G,V)2}), \mu_{(G,V)} (y_{(G,V)1}, y_{(G,V)2}) \} = \max\{ \max\{ \mu_{(F,A)} (x_{(F,A)1}), \mu_{(F,A)} (x_{(F,A)2}) \}, \max \{ \mu_{(F,A)} (y_{(F,A)1}), \mu_{(F,A)} (y_{(F,A)2}) \}\}$.

If $\mu_{(F,A)} (x_{(F,A)1}+ y_{(F,A)1}) \geq \mu_{(F,A)} (x_{(F,A)2}+ y_{(F,A)2})$, $\mu_{(F,A)} (x_{(F,A)1}) \geq \mu_{(F,A)} (x_{(F,A)2})$, $\mu_{(F,A)} (y_{(F,A)1}) \geq \mu_{(F,A)} (y_{(F,A)2})$, we get, $\mu_{(F,A)} (x_{(F,A)1}+ y_{(F,A)1}) \leq \max\{ \mu_{(F,A)} (x_{(F,A)1}), \mu_{(F,A)} (y_{(F,A)1}) \}$, for all $x_{(F,A)1}$ and $y_{(F,A)1}$ in R.And, $\max \{ \mu_{(F,A)} (x_{(F,A)1}y_{(F,A)1}), \mu_{(F,A)} (x_{(F,A)2}y_{(F,A)2})\} = \mu_{(G,V)} (x_{(G,V)1}y_{(G,V)1}, x_{(G,V)2}y_{(G,V)2}) = \mu_{(G,V)} [(x_{(G,V)1}, x_{(G,V)2}) (y_{(G,V)1}, y_{(G,V)2})] = \mu_{(G,V)} (x_{(G,V)} y_{(G,V)}) \leq \max\{ \mu_{(G,V)} (x_{(G,V)}), \mu_{(G,V)} (y_{(G,V)}) \} = \max\{ \mu_{(G,V)} (x_{(G,V)1}, x_{(G,V)2}), \mu_{(G,V)} (y_{(G,V)1}, y_{(G,V)2}) \} = \max\{ \max \{ \mu_{(F,A)} (x_{(F,A)1}), \mu_{(F,A)} (x_{(F,A)2}) \}, \max \{ \mu_{(F,A)} (y_{(F,A)1}), \mu_{(F,A)} (y_{(F,A)2})\}$.If $\mu_{(F,A)} (x_{(F,A)1}y_{(F,A)1}) \geq \mu_{(F,A)} (x_{(F,A)2}y_{(F,A)2})$, $\mu_{(F,A)} (x_{(F,A)1}) \geq \mu_{(F,A)} (x_{(F,A)2})$, $\mu_{(F,A)} (y_{(F,A)1}) \geq \mu_{(F,A)} (y_{(F,A)2})$, we get $\mu_{(F,A)} (x_{(F,A)1}y_{(F,A)1}) \leq \max\{ \mu_{(F,A)} (x_{(F,A)1}), \mu_{(F,A)} (y_{(F,A)1}) \}$, for all $x_{(F,A)1}$ and $y_{(F,A)1}$ in R.Therefore (F,A) is an anti-fuzzy soft subhemiring of R.

2.5 Theorem: (F,A) is a anti –fuzzy soft subhemiring of a hemiring $(R, +, \cdot)$ if and just if $\mu_{(F,A)} (x_{(F,A)} +y_{(F,A)}) \leq \max\{ \mu_{(F,A)} (x_{(F,A)}), \mu_{(F,A)}(y_{(F,A)})\}$, $\mu_{(F,A)} (x_{(F,A)}y_{(F,A)}) \leq \max\{ \mu_{(F,A)} (x_{(F,A)}), \mu_{(F,A)} (y_{(F,A)}) \}$, for all $x_{(F,A)}$ and $y_{(F,A)}$ in R.

Proof:It is trifling.

2.6 Theorem: If (F,A) is an anti-fuzzy soft subhemiring of a hemiring $(R, +, \cdot)$, then $H = \{ x_{(F,A)} / x_{(F,A)} \in R: \mu_{(F,A)} (x_{(F,A)}) =0\}$ is either unfilled or is a subhemiring of R.

Proof:If no component fulfills this condition, at that point H is vacant. On the off chance that x(F,A) and y(F,A) in H, at that point $\mu_{(F,A)} (x_{(F,A)}+y_{(F,A)}) \leq \max \{ \mu_{(F,A)} (x_{(F,A)}), \mu_{(F,A)} (y_{(F,A)}) \} = \max \{ 0 , 0 \} = 0$.Therefore, $\mu_{(F,A)} (x_{(F,A)}+ y_{(F,A)}) = 0$. And $\mu_{(F,A)} (x_{(F,A)}y_{(F,A)}) \leq \max \{ \mu_{(F,A)} (x_{(F,A)}), \mu_{(F,A)} (y_{(F,A)}) \} = \max \{ 0 , 0\}= 0$.Therefore, $\mu_{(F,A)} (x_{(F,A)}y_{(F,A)}) =0$.We get $x_{(F,A)}+y_{(F,A)}$, $x_{(F,A)}y_{(F,A)}$ in H.

In this way, H is a subhemiring of R.Hence H is either unfilled or is a subhemiring of R.

2.7 Theorem: Let (F, A) be an anti-fuzzy soft subhemiring of a hemiring $(R, +, \cdot)$. On the off chance that $\mu_{(F,A)} (x_{(F,A)}+ y_{(F,A)}) = 1$, at that point either $\mu_{(F,A)} (x_{(F,A)}) =1$ or $\mu_{(F,A)} (y_{(F,A)}) = 1$, for all $x_{(F,A)}$ and $y_{(F,A)}$ in R.

Proof: Let $x_{(F,A)}$ and $y_{(F,A)}$ in R. By the definition $\mu_{(F,A)} (x_{(F,A)}+ y_{(F,A)}) \leq \max \{ \mu_{(F,A)} (x_{(F,A)}), \mu_{(F,A)} (y_{(F,A)}) \}$,which implies that $1 \leq \max \{\mu_{(F,A)} (x_{(F,A)}), \mu_{(F,A)} (y_{(F,A)}) \}$.

In this manner, either $\mu_{(F,A)} (x_{(F,A)}) = 1$ or $\mu_{(F,A)} (y_{(F,A)}) = 1$.

In the accompanying Theorem ◦ is the structure operation of capacities:

2.8 Theorem: Let (F,A) be an anti-fuzzy soft subhemiring of a hemiring H and f is an anti- isomorphism from a hemiring R onto H. At that point (F,A)◦f is a anti Fuzzy soft subhemiring of R.

Proof: Let $x_{(F,A)}$ and $y_{(F,A)}$ in R and (F,A) be an anti-fuzzy soft subhemiring of a hemiring H.Then we have,$(\mu_{(F,A)}\circ f)(x_{(F,A)}+y_{(F,A)})=\mu_{(F,A)}(f(x_{(F,A)}+y_{(F,A)}))=\mu_{(F,A)} (f(y_{(F,A)})+f(x_{(F,A)}))$, as f is an anti-isomorphism $\leq \max \{ \mu_{(F,A)} (f(x_{(F,A)})), \mu_{(F,A)} (f(y_{(F,A)})) \}, \leq \max \{ (\mu_{(F,A)} \circ f)(x_{(F,A)}), (\mu_{(F,A)} \circ f)(y_{(F,A)}) \}$,which suggests that $(\mu_{(F,A)} \circ f)(x_{(F,A)}+y_{(F,A)}) \leq \max \{ (\mu_{(F,A)} \circ f)(x_{(F,A)}), (\mu_{(F,A)} \circ f)(y_{(F,A)}) \}$.$(\mu_{(F,A)} \circ f)(x_{(F,A)}y_{(F,A)}) = \mu_{(F,A)} (f(x_{(F,A)}y_{(F,A)}))= \mu_{(F,A)} (f(y_{(F,A)})f(x_{(F,A)}))$, as f is an anti-isomorphism $\leq \max \{ \mu_{(F,A)} (f(x_{(F,A)})), \mu_{(F,A)} (f(y_{(F,A)})) \}, \leq \max \{ (\mu_{(F,A)} \circ f)(x_{(F,A)}), (\mu_{(F,A)} \circ f)(y_{(F,A)}) \}$,which implies that $(\mu_{(F,A)} \circ f)(x_{(F,A)}y_{(F,A)}) \leq \max \{ (\mu_{(F,A)}\circ f) (x_{(F,A)}), (\mu_{(F,A)}\circ f)(y_{(F,A)})\}$.Therefore (F,A)◦f is an anti-fuzzy soft subhemiring of a hemiring R.

2.9 Theorem: Let (F,A) be a anti Fuzzysoft subhemiring of a hemiring (R, +, .), then the pseudo anti Fuzzy soft coset $(a(F,A))^p$ is an anti Fuzzy soft subhemiring of a hemiring R, for each a in R.

Proof: Let (F,A) be an anti-fuzzy soft subhemiring of a hemiring R.For every $x_{(F,A)}$ and $y_{(F,A)}$ in R, we have, $((a\mu_{(F,A)})^p)(x_{(F,A)}+y_{(F,A)}) = p(a) \mu_{(F,A)} (x_{(F,A)}+y_{(F,A)}) \leq p(a) \max \{ \mu_{(F,A)} (x_{(F,A)}), \mu_{(F,A)} (y_{(F,A)}) \}= \max \{ p(a) \mu_{(F,A)} (x_{(F,A)}), p(a) \mu_{(F,A)} (y_{(F,A)}) \} = \max \{ ((a\mu_{(F,A)})^p)(x_{(F,A)}), ((a\mu_{(F,A)})^p)(y_{(F,A)}) \}$.Therefore, $((a\mu_{(F,A)})^p)(x_{(F,A)}+ y_{(F,A)}) \leq \max \{ ((a\mu_{(F,A)})^p)(x_{(F,A)}), ((a\mu_{(F,A)})^p)(y_{(F,A)}) \}$.Now, $((a\mu_{(F,A)})^p)(x_{(F,A)}y_{(F,A)}) = p(a) \mu_{(F,A)} (x_{(F,A)}y_{(F,A)}) \leq p(a)\max \{ \mu_{(F,A)} (x_{(F,A)}), \mu_{(F,A)} (y_{(F,A)}) \}= \max \{ p(a) \mu_{(F,A)} (x_{(F,A)}), p(a) \mu_{(F,A)} (y_{(F,A)}) \}= \max \{ ((a\mu_{(F,A)})^p)(x_{(F,A)}), ((a\mu_{(F,A)})^p)(y_{(F,A)}) \}$.Therefore, $((a\mu_{(F,A)})^p)(x_{(F,A)}y_{(F,A)}) \leq \max \{ ((a\mu_{(F,A)})^p)(x_{(F,A)}), ((a\mu_{(F,A)})^p)(y_{(F,A)}) \}$.Hence $(a(F,A))^p$ is an anti-fuzzy soft subhemiring of a hemiring R.

2.10 Theorem: Let (R, + , .) and (R|, +, .) be any two hemirings. The homomorphic image of an anti Fuzzysoft subhemiring of R is an anti Fuzzysoft subhemiring of R^1.

Proof: Let (R, +, .) and (R^I, +, .) be any two hemirings. Let $f : R \rightarrow R^I$ be a homomorphism. At that point, i) f(x+y) = f(x) + f(y) and ii) f(xy) = f(x) f(y), for all x and y in R. Let (G,V) = f((F,A)), where (F,A) is an anti Fuzzy soft subhemiring of R. We need to demonstrate that (G,V) is an anti Fuzzy soft subhemiring of R^1. Now, for $f(x_{(G,V)})$, $f(y_{(G,V)})$ in R^I,$\mu_{(G,V)}(f(x_{(G,V)}) + f(y_{(G,V)})) = \mu_{(G,V)} (f(x_{(G,V)}+y_{(G,V)}))$, as f is a homomorphis $\leq \mu_{(F,A)} (x_{(F,A)}+ y_{(F,A)}) \leq \max \{ \mu_{(F,A)} (x_{(F,A)}), \mu_{(F,A)} (y_{(F,A)}) \}$which suggests that$\mu_{(G,V)} (f(x_{(G,V)}) + f(y_{(G,V)})) \leq \max \{ \mu_{(G,V)} (f(x_{(G,V)})), \mu_{(G,V)} (f(y_{(G,V)})) \}$.Again, $\mu_{(G,V)} (f(x_{(G,V)})f(y_{(G,V)})) = \mu_{(G,V)} (f(x_{(G,V)}y_{(G,V)}))$, as f is a homomorphism $\leq \mu_{(F,A)} (x_{(F,A)}y_{(F,A)}) \leq \max\{ \mu_{(F,A)} (x_{(F,A)}), \mu_{(F,A)} (y_{(F,A)})\}$which infers that $\mu_{(G,V)} (f(x_{(G,V)})f(y_{(G,V)})) \leq \max\{ \mu_{(G,V)} (f(x_{(G,V)}), \mu_{(G,V)} (f(y_{(G,V)})\}$.Hence (G,V) is an anti-fuzzy soft subhemiring of R^I

2.11 Theorem: Let (R, +, .) and (R^I, +, .) be any two hemirings. The homomorphic preimage of an anti-fuzzy soft subhemiring of R^I is an anti-fuzzy soft subhemiring of R.

Proof: Let (R, +, .) and (R^I, +, .) be any two hemirings.Let $f : R \rightarrow R^I$ be a homomorphism.At that point, i) f(x+y) = f(x) + f(y) and ii) f(xy) = f(x) f(y), for all x and y in R.

Let (G,V) = f((F,A)), where (G,V) is an anti-fuzzy soft subhemiring of R^I. We need to demonstrate that (F,A) is an anti Fuzzy soft subhemiring of R. Let $x_{(F,A)}$ and $y_{(F,A)}$ in R. $\mu_{(F,A)} (x_{(F,A)}+ y_{(F,A)}) = \mu_{(G,V)} (f(x_{(G,V)} + y_{(G,V)}))$, since $\mu_{(G,V)} (f(x_{(G,V)})) = \mu_{(F,A)} (x) = \mu_{(G,V)} (f(x) + f(y))$, as f is a homomorphism $\leq \max \{ \mu_{(G,V)} (f(x_{(G,V)})), \mu_{(G,V)} (f(y_{(G,V)})) \} = \max \{ \mu_{(F,A)} (x_{(F,A)}), \mu_{(F,A)} (y_{(F,A)}) \}$, since $\mu_{(G,V)} (f(x_{(G,V)})) = \mu_{(F,A)} (x_{(F,A)})$which infers that $\mu_{(F,A)} (x_{(F,A)}+ y_{(F,A)}) \leq \max \{ \mu_{(F,A)} (x_{(F,A)}), \mu_{(F,A)} (y_{(F,A)}) \}$.Again,$\mu_{(F,A)} (x_{(F,A)}y_{(F,A)}) = \mu_{(G,V)} (f(x_{(G,V)} y_{(G,V)}))$, since $\mu_{(G,V)} (f(x_{(G,V)})) = \mu_{(F,A)} (x_{(F,A)})= \mu_{(G,V)} (f(x_{(G,V)})f(y_{(G,V)}))$, as f is a homomorphism $\leq \max\{ \mu_{(G,V)} (f(x_{(G,V)})), \mu_{(G,V)} (f(y_{(G,V)})) \} = \max\{ \mu_{(F,A)} (x_{(F,A)}), \mu_{(F,A)} (y_{(F,A)}) \}$, since $\mu_{(G,V)} (f(x_{(G,V)})) = \mu_{(F,A)} (x_{(F,A)})$ which suggests that $\mu_{(F,A)} (x_{(F,A)}y_{(F,A)}) \leq \max\{ \mu_{(F,A)} (x_{(F,A)}), \mu_{(F,A)} (y_{(F,A)}) \}$.Hence (F,A) is an anti-fuzzy soft subhemiring of R.

2.12 Theorem : Let (F,A) be an anti-fuzzy soft subhemiring of a hemiring R. At that point (F,A^0) is an anti-fuzzy soft subhemiring of a hemiring R , for all $x_{(F,A)}$ and $y_{(F,A)}$ in R .

Proof : For any $x_{(F,A)} \in R$, we have $(F,A^0) (x_{(F,A)}+y_{(F,A)}) = (F,A) (x_{(F,A)}+y_{(F,A)}) / (F,A) (0) \leq [1 / (F,A) (0)] \max\{ (F,A) (x_{(F,A)}), (F,A) (y_{(F,A)}) \}$,$= \max \{ [(F,A) (x_{(F,A)}) / (F,A) (0)] , [(F,A) (y_{(F,A)}) / (F,A) (0)] \}$,$= \max\{ (F,A^0) (x_{(F,A)}), (F,A^0) (y_{(F,A)})\}$.That is $(F,A^0) (x_{(F,A)}+y_{(F,A)}) \leq \max \{ (F,A^0)(x_{(F,A)}), (F,A^0) (y_{(F,A)})\}$.Similarly, $(F,A^0) (x_{(F,A)}y_{(F,A)}) = (F,A) (x_{(F,A)}y_{(F,A)}) / A(0) \leq [1 / (F,A) (0)] \max\{ (F,A) (x_{(F,A)}), (F,A) (y_{(F,A)}) \}$,$= \max \{ [(F,A) (x_{(F,A)}) / (F,A) (0)] , [(F,A) (y_{(F,A)}) / (F,A) (0)] \}$,$= \max\{ (F,A^0) (x_{(F,A)}), (F,A^0) (y_{(F,A)})\}$. That is $(F,A^0) (x_{(F,A)}y_{(F,A)}) \leq \max \{ (F,A^0) (x_{(F,A)}), (F,A^0) (y_{(F,A)})\}$.Hence (F,A^0) is an anti-fuzzy soft sub hemiring of a hemiring R , for all $x_{(F,A)}$ and $y_{(F,A)}$ in R.

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