AN INTUITIONISTIC FUZZY IDEAL IN FIELD

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Abstract: In this paper, We study intuitionistic fuzzy field and introduce intuitionistic fuzzy subfield and anti intuitionistic fuzzy ideal of field. And investigate some related theorems.

Index Terms: Fuzzy set, Intuitionistic fuzzy set, fuzzy field, intuitionistic fuzzy field, intuitionistic fuzzy sub-field, intuitionistic fuzzy ideal, anti intuitionistic fuzzy ideal.

I. INTRODUCTION:

The concept of Fuzzy set (IF was short) was introduced Zadeh.L.A [12] in 1965 has showed meaningful applications in many field of studies and the theory of intuitionistic fuzzy set (IFS for short) as an extension of fuzzy set is introduced Atanassov.K [2] in 1983. The notion of fuzzy subgroups, anti-fuzzy subgroups, fuzzy fields and fuzzy linear spaces was introduced by Biswas.R [6,7]. In this paper, we introduce some new kind of intuitionistic fuzzy subfield and intuitionistic fuzzy ideal (IFSF and IFI for short) of a field. Intuitionistic fuzzy fields which are regarded as a generalization of field have been found useful in solving problems in different areas of mathematics and Engineering.

1.1 Definition:

Let X be a non-empty set. A fuzzy set A drawn from X is definied as

$$A = \{< x, \mu_A(x) >: x \in X\}$$

Where, $\mu_A(x): x \to [0,1]$ is the membership function of the fuzzy set A. fuzzy set is a collection of object with graded membership. i.e) having degrees of membership.

1.2 Definition:

An intuitionistic fuzzy set A of a non-empty set F is a object of the form

$$A = \{< x, \mu_A(x), V_A(x) >: x \in F\}$$

Where, $\mu_A(x) \to F[0,1]$ and $V_A(x) \to F[0,1]$ are membership and non-membership functions such that for each $x \in F$. we have, $0 \le \mu_A(x) + V_A(x) \le 1$.

1.3 Remark:

i) When $\mu_A(x) + V_A(x) = 1\ i.e) V_A(x) = 1 - \mu_A(x)$ then A is called fuzzy set.

ii) We denote the intuitionistic fuzzy set,

$$A =< x, \mu_A(x), V_A(x) >: x \in F\}$$

By $A = (\mu_A, V_A)$.

1.4 Definition:

Let F be a field and A is a fuzzy set of F if the following conditions hold,

i) $\mu_A(x + y) \ge \min\{\mu_A(x), \mu_A(y)\}$
ii) $\mu_A(-x) \ge \mu_A(x)$
iii) $\mu_A(xy) \ge \min\{\mu_A(x), \mu_A(y)\}$
iv) $\mu_A(x^{-1}) \ge \mu_A(x)$

We call A is a fuzzy field of F. denoted by (A, F). Also (A, F) is called a fuzzy field of F.

1.5 Definition:

Let F be a field and $A \in IFS(F)$. If for all $x, y \in F$ the following conditions are vaild then A is called an intuitionistic fuzzy field over F. shortly $IFF(F)$.

i) $\mu_A(x + y) \ge \min\{\mu_A(x), \mu_A(y)\}$
ii) $\mu_A(-x) \ge \mu_A(x)$
iii) $\mu_A(xy) \ge \min\{\mu_A(x), \mu_A(y)\}$
iv) $\mu_A(x^{-1}) \ge \mu_A(x)$
v) $V_A(x + y) \le \max\{V_A(x), V_A(y)\}$
vi) $V_A(-x) \le V_A(x)$
vii) $V_A(xy) \le \max\{V_A(x), V_A(y)\}$
viii) $V_A(x^{-1}) \le V_A(x)$

1.6 Definition:

Let F be a field. An intuitionistic fuzzy ,

$$A = \{< x, \mu_A(x), V_A(x) >: x \in F\}$$

Of F is said to be intuitionistic fuzzy subfield (in short IFSF) of F if,

i) $\mu_A(x + y) \ge \min\{\mu_A(x), \mu_A(y)\}$

ii) $\mu_A(-x) \geq \mu_A(x)$
iii) $\mu_A(xy) \geq \min\{\mu_A(x), \mu_A(y)\}$
iv) $\mu_A(x^{-1}) \geq \mu_A(x)$
v) $\nu_A(x+y) \leq \max\{\nu_A(x), \nu_A(y)\}$
vi) $\nu_A(-x) \leq \nu_A(x)$
vii) $\nu_A(xy) \leq \max\{\nu_A(x), \nu_A(y)\}$
viii) $\nu_A(x^{-1}) \leq \nu_A(x)$

1.7 Definition:

An intuitionistic fuzzy set $A = \{< x, \mu_A(x), \nu_A(x) >: x \in F\}$ of a field F is said to be intuitionistic fuzzy ideal (in short IFI) of F if,

i) $\mu_A(x+y) \geq \min\{\mu_A(x), \mu_A(y)\}$
ii) $\mu_A(xy) \geq \min\{\mu_A(x), \mu_A(y)\}$
iii) $\nu_A(x+y) \leq \max\{\nu_A(x), \nu_A(y)\}$
iv) $\nu_A(xy) \leq \max\{\nu_A(x), \nu_A(y)\}$

1.8 Definition:

An intuitionistic fuzzy set $A = \{< x, \mu_A(x), \nu_A(x) >: x \in F\}$ of a field F is said to be anti intuitionistic fuzzy ideal (in short AIFI) of F if,

i) $\mu_A(x+y) \leq \max\{\mu_A(x), \mu_A(y)\}$
ii) $\mu_A(xy) \leq \max\{\mu_A(x), \mu_A(y)\}$
iii) $\nu_A(x+y) \geq \min\{\nu_A(x), \nu_A(y)\}$
iv) $\nu_A(xy) \geq \min\{\nu_A(x), \nu_A(y)\}$

II. INTUITIONISTIC FUZZY SUBFIELD AND INTUITIONISTIC FUZZY IDEAL

2.1 Theorem:

Let $A = (\mu_A(x), \nu_A(x))$ be intuitionistic fuzzy subfield F then,

i) If $\mu_A(x) \neq \mu_A(y)$ then
$\mu_A(x+y) = \min\{\mu_A(x), \mu_A(y)\}\ \forall x, y \in F.$

ii) If $\nu_A(x) \neq \nu_A(y)$ then
$\nu_A(x+y) = \min\{\nu_A(x), \nu_A(y)\}\ \forall x, y \in F.$

Proof:

i) Let $\mu_A(x) \neq \mu_A(y)$ then $\mu_A(x+y) = \min\{\mu_A(x), \mu_A(y)\}$ for all$x, , y \in F$

Let $\mu_A(x) \neq \mu_A(y)$

we can suppose that,

$\mu_A(x) > \mu_A(y) = \lambda$

As, $\mu_A(x+y) \geq \min\{\mu_A(x), \mu_A(y)\} \geq \lambda$

so, $\mu_A(x+y) \geq \lambda$

If, $\mu_A(x+y) > \lambda$ then,

$\mu_A(y) = \mu_A\{x-(x-y) \geq \min\{\mu_A(x), \mu_A(x-y)\} > \lambda$

i.e) $\mu_A(y) > \lambda$,

which is contrary to the assumption and so,

$\mu_A(\ x+y) = \lambda = \min\{\mu_A(x), \mu_A(y)\}$

Next, we have to prove(ii)

ii) Let, $\nu_A(x) \neq \nu_A(y)$

we can suppose that,

$\nu_A(x) < \nu_A(y) = \lambda$

As, $\nu_A(x+y) \leq \max\{\nu_A(x), \nu_A(y)\} \leq \lambda$

so, $\nu_A(x+y) \leq \lambda$

If, $\nu_A(x+y) < \lambda$ then,

$\nu_A(y) = \nu_A\{x-(x-y) \leq \max\{\nu_A(x), \nu_A(x-y)\} < \lambda$

i.e) $\nu_A(y) < \lambda$,

which is contrary to the assumption and so,

$\nu_A(\ x+y) = \lambda = \max\{\nu_A(x), \nu_A(y)\}$

Hence the proof.

2.2 Corollary:

Let A be an IFSF of a field F, then

i) Among $\mu_A(x+y)$, $\mu_A(x)$, $\mu_A(y)$ at least two are the same,
ii) Among $\nu_A(x+y)$, $\nu_A(x)$, $\nu_A(y)$ at least two are the same,

Proof:

i) If $\mu_A(x) \neq \mu_A(y)$ from the theorem [2.1]

We have,

$\mu_A(\ x+y) = \min\{\mu_A(x), \mu_A(y)\}$

suppose, $\mu_A(x) > \mu_A(y)\}$

then, $\mu_A(\ x+y) = \mu_A(y)$

ii) If $\nu_A(x) \neq \nu_A(y)$ from the theorem [2.1]

We have,

$\nu_A(x + y) = \max\{\nu_A(x), \nu_A(y)\}$

suppose, $\nu_A(x) < \nu_A(y)\}$

then, $\nu_A(x + y) = \nu_A(y)$

2.3 Theorem:

Let A be IFS of a filed then A is IFSF of F if and only if A^c is IFSF of F.

Proof:

Let, A be IFSF of a filed F then,

i) $\mu_A(x + y) \geq \min\{\mu_A(x), \mu_A(y)\}$

ii) $\nu_A(x + y) \leq \max\{\nu_A(x), \nu_A(y)\}$

iii) $\mu_A(-x) \geq \mu_A(x)$

iv) $\nu_A(-x) \leq \nu_A(x)$

v) $\mu_A(xy) \geq \min\{\mu_A(x), \mu_A(y)\}$

vi) $\nu_A(xy) \leq \max\{\nu_A(x), \nu_A(y)\}$

vii) $\mu_A(x^{-1}) \geq \mu_A(x)$

viii) $\nu_A(x^{-1}) \leq \nu_A(x)$

To show that, $A^c = ({\mu_A}^c, {\nu_A}^c) = (\mu_A, \nu_A)$ is IFSF of F,

From(i),

We have,

$\mu_A(x + y) \geq \min\{\mu_A(x), \mu_A(y)\}$

i.e) ${\nu_A}^c(x + y) \geq \min\{{\nu_A}^c(x), {\nu_A}^c(y)\}$

$\Longrightarrow \min\{{\nu_A}^c(x), {\nu_A}^c(y)\} \leq {\nu_A}^c(x + y)$

i.e) $\min\{1 - {\mu_A}^c(x), 1 - {\mu_A}^c(y)\} \leq 1 - {\mu_A}^c(x + y)$

$\Longrightarrow 1 - \max\{{\mu_A}^c(x), {\mu_A}^c(y)\} \leq 1 - {\mu_A}^c(x + y)$

i.e) ${\mu_A}^c(x + y) \leq \max\{{\mu_A}^c(x), {\mu_A}^c(y)\}$

and, we can show that, (ii)

$\nu_A(x + y) \leq \max\{\nu_A(x), \nu_A(y)\}$

i.e) ${\mu_A}^c(x + y) \leq \max\{{\mu_A}^c(x), {\mu_A}^c(y)\}$

$\Longrightarrow \max\{{\mu_A}^c(x), {\mu_A}^c(y)\} \geq {\mu_A}^c(x + y)$

i.e) $\max\{1 - {\nu_A}^c(x), 1 - {\nu_A}^c(y)\} \geq 1 - {\nu_A}^c(x + y)$

$\Longrightarrow 1 - \min\{{\nu_A}^c(x), {\nu_A}^c(x)\} \geq 1 - {\nu_A}^c(x + y)$

i.e) ${\nu_A}^c(x + y) \geq \min\{{\nu_A}^c(x), {\nu_A}^c(y)\}$

from (iii)

We have,

$\mu_A(xy) \geq \min\{\mu_A(x), \mu_A(y)\}$

i.e) ${\nu_A}^c(xy) \geq \min\{{\nu_A}^c(x), {\nu_A}^c(y)\}$

thus,

$\Longrightarrow \min\{{\nu_A}^c(x), {\nu_A}^c(y)\} \leq {\nu_A}^c(xy)$

i.e) $\min\{1 - {\mu_A}^c(x), 1 - {\mu_A}^c(y)\} \leq 1 - {\mu_A}^c(xy)$

$\Longrightarrow 1 - \max\{{\mu_A}^c(x), {\mu_A}^c(y)\} \leq 1 - {\mu_A}^c(xy)$

i.e) $\max\{{\mu_A}^c(x), {\mu_A}^c(y)\} \geq {\mu_A}^c(xy)$

${\mu_A}^c(xy) \leq \max\{{\mu_A}^c(x), {\mu_A}^c(y)\}$

and, we can show that, (iv)

$\nu_A(xy) \leq \max\{\nu_A(x), \nu_A(y)\}$

i.e) ${\mu_A}^c(xy) \leq \max\{{\mu_A}^c(x), {\mu_A}^c(y)\}$

thus,

$\Longrightarrow \max\{{\mu_A}^c(x), {\mu_A}^c(y)\} \geq {\mu_A}^c(xy)$

i.e) $\max\{1 - {\nu_A}^c(x), 1 - {\nu_A}^c(y)\} \geq 1 - {\nu_A}^c(xy)$

$\Longrightarrow 1 - \min\{{\nu_A}^c(x), {\nu_A}^c(x)\} \geq 1 - {\nu_A}^c(xy)$

i.e) $\min\{{\nu_A}^c(x), {\nu_A}^c(x)\} \leq {\nu_A}^c(xy)$

i.e) ${\nu_A}^c(xy) \geq \min\{{\nu_A}^c(x), {\nu_A}^c(y)\}$

from (v):

we have,

$\mu_A(-x) \geq \mu_A(x)$

i.e) ${\nu_A}^c(-x) \geq {\nu_A}^c(x)$

thus, ${\nu_A}^c(x) \leq {\nu_A}^c(-x)$

i.e) $1 - {\mu_A}^c(x) \leq 1 - {\mu_A}^c(-x)$

${\mu_A}^c(x) \geq {\mu_A}^c(-x)$

${\mu_A}^c(-x) \leq {\mu_A}^c(x)$

And also, we can show that (vi),

we have,

$V_A(-x) \leq V_A(x)$
i.e) ${\mu_A}^c(-x) \leq {\mu_A}^c(x)$
thus, ${\mu_A}^c(x) \geq {\mu_A}^c(-x)$
i.e) $1 - {V_A}^c(x) \geq 1 - {V_A}^c(-x)$
${V_A}^c(x) \leq {V_A}^c(-x)$
${V_A}^c(-x) \geq {V_A}^c(x)$

From (vii),
we have,
$\mu_A(x^{-1}) \geq \mu_A(x)$
i.e) ${V_A}^c(x^{-1}) \geq {V_A}^c(x)$
thus, ${V_A}^c(x) \leq {V_A}^c(x^{-1})$
i.e) $1 - {\mu_A}^c(x) \leq 1 - {\mu_A}^c(x^{-1})$
${\mu_A}^c(x) \geq {\mu_A}^c(x^{-1})$
${\mu_A}^c(x^{-1}) \leq {\mu_A}^c(x)$

And also, we can show that (viii),
we have,
$V_A(x^{-1}) \leq V_A(x)$
i.e) ${\mu_A}^c(x^{-1}) \leq {\mu_A}^c(x)$
thus, ${\mu_A}^c(x) \geq {\mu_A}^c(x^{-1})$
i.e) $1 - {V_A}^c(x) \geq 1 - {V_A}^c(x^{-1})$
${V_A}^c(x) \leq {V_A}^c(x^{-1})$
${V_A}^c(x^{-1}) \geq {V_A}^c(x)$

Therefore, A is IFSF of F then A^c is IFSF of F.
Similarly, when A^c is IFSF of F we can show that A is IFSF of F
Hence the proof.

2.4 Theorem:

Let A be intuitionistic fuzzy set of a field F, then A is intuitionistic fuzzy ideal of F if and only if A^c is intuitionistic fuzzy ideal of F.

Proof:

Firstly, let A be intuitionistic fuzzy ideal of F, then

i) $\mu_A(x + y) \geq \min\{\mu_A(x), \mu_A(y)\}$
ii) $\mu_A(xy) \geq \min\{\mu_A(x), \mu_A(y)\}$
iii) $V_A(x + y) \leq \max\{V_A(x), V_A(y)\}$
iv) $V_A(xy) \leq \max\{V_A(x), V_A(y)\}$

to show that $A^c = ({\mu_A}^c, {V_A}^c) = (V_A, \mu_A)$ is intuitionistic fuzzy ideal of F.

From(i),
We have,
$\mu_A(x + y) \geq \min\{\mu_A(x), \mu_A(y)\}$
i.e) ${V_A}^c(x + y) \geq \min\{{V_A}^c(x), {V_A}^c(y)\}$
$\Rightarrow \min\{{V_A}^c(x), {V_A}^c(y)\} \leq {V_A}^c(x + y)$
i.e) $\min\{1 - {\mu_A}^c(x), 1 - {\mu_A}^c(y)\} \leq 1 - {\mu_A}^c(x + y)$
$\Rightarrow 1 - \max\{{\mu_A}^c(x), {\mu_A}^c(y)\} \leq 1 - {\mu_A}^c(x + y)$
i.e) ${\mu_A}^c(x + y) \leq \max\{{\mu_A}^c(x), {\mu_A}^c(y)\}$

and, we can show that, (ii)
$V_A(x + y) \leq \max\{V_A(x), V_A(y)\}$
i.e) ${\mu_A}^c(x + y) \leq \max\{{\mu_A}^c(x), {\mu_A}^c(y)\}$
$\Rightarrow \max\{{\mu_A}^c(x), {\mu_A}^c(y)\} \geq {\mu_A}^c(x + y)$
i.e) $\max\{1 - {V_A}^c(x), 1 - {V_A}^c(y)\} \geq 1 - {V_A}^c(x + y)$
$\Rightarrow 1 - \min\{{V_A}^c(x), {V_A}^c(x)\} \geq 1 - {V_A}^c(x + y)$
i.e) ${V_A}^c(x + y) \geq \min\{{V_A}^c(x), {V_A}^c(y)\}$

from (iii)
We have,
$\mu_A(xy) \geq \max\{\mu_A(x), \mu_A(y)\}$
i.e) ${V_A}^c(xy) \geq \max\{{V_A}^c(x), {V_A}^c(y)\}$
thus, $\Rightarrow \max\{{V_A}^c(x), {V_A}^c(y)\} \leq {V_A}^c(xy)$
i.e) $\max\{1 - {\mu_A}^c(x), 1 - {\mu_A}^c(y)\} \leq 1 - {\mu_A}^c(xy)$
$\Rightarrow 1 - \min\{{\mu_A}^c(x), {\mu_A}^c(y)\} \leq 1 - {\mu_A}^c(xy)$
i.e) $\min\{{\mu_A}^c(x), {\mu_A}^c(y)\} \geq {\mu_A}^c(xy)$
${\mu_A}^c(xy) \leq \min\{{\mu_A}^c(x), {\mu_A}^c(y)\}$

and, we can show that, (iv)
$V_A(xy) \leq \min\{V_A(x), V_A(y)\}$
i.e) ${\mu_A}^c(xy) \leq \min\{{\mu_A}^c(x), {\mu_A}^c(y)\}$
thus, $\Rightarrow \min\{{\mu_A}^c(x), {\mu_A}^c(y)\} \geq {\mu_A}^c(xy)$

i.e) $\min\{1-\mathrm{V}_A{}^c(x), 1-\mathrm{V}_A{}^c(y)\} \geq 1-\mathrm{V}_A{}^c(xy)$

$\Rightarrow 1-\max\{\mathrm{V}_A{}^c(x), \mathrm{V}_A{}^c(x)\} \geq 1-\mathrm{V}_A{}^c(xy)$

i.e) $\max\{\mathrm{V}_A{}^c(x), \mathrm{V}_A{}^c(x)\} \leq \mathrm{V}_A{}^c(xy)$

i.e) $\mathrm{V}_A{}^c(xy) \geq \max\{\mathrm{V}_A{}^c(x), \mathrm{V}_A{}^c(y)\}$

Therefore, A is IFSF of F then A^c is IFSF of F.

Similarly, when A^c is IFSF of F we can show that A is IFSF of F

Hence the proof.

2.5 Theorem:

Union of two IFI of a field F is also IFI of F.

Proof:

Let, X and Y be any two intuitionistc fuzzy ideal of a field F and let, x and y in F

Let,

$A = \{< x, \mu_A(x), \mathrm{V}_A(x) >: x \in X\}$ and

$B = \{< y, \mu_B(y), \mathrm{V}_B(y) >: y \in Y\}$

And also let, $C = A \cup B$

$C = \{< x, \mu_C(x), \mathrm{V}_C(x) >: x \in F\}$

Where,

$\min\{\mu_A(x), \mu_B(x)\} = \mu_c(x)$ and $\max\{\mathrm{V}_A(x), \mathrm{V}_B(x)\} = \mathrm{V}_C(x)$

Now,

$\mu_C(x+y) = \min\{\mu_A(x+y), \mu_B(x+y)\}$, $\mathrm{V}_C(x+y) = \max\{\mathrm{V}_A(x+y), \mathrm{V}_B(x+y)\}$

And,

$\mu_C(xy) = \max\{\mu_A(xy), \mu_B(xy)\}$, $\mathrm{V}_C(xy) = \min\{\mathrm{V}_A(xy), \mathrm{V}_B(xy)\}$

Now,

$\mu_C(x+y) = \min\{\mu_A(x+y), \mu_B(x+y)\}$

$\leq \min\{\min\{\mu_A(x), \mu_A(y)\}, \min\{\mu_B(x), \mu_B(y)\}\}$

$= \min\{\min\{\mu_A(x), \mu_B(x)\}, \min\{\mu_A(y), \mu_B(y)\} = \min\{\mu_C(x), \mu_c(y)\}$

Therefore, $\mu_C(x+y) \geq \min\{\mu_C(x), \mu_C(y)\}$ for all x and y in F.

And,

$\mu_C(xy) = \max\{\mu_A(xy), \mu_B(xy)\}$

$\leq \max\{\max\{\mu_A(x), \mu_A(y)\}, \max\{\mu_B(x), \mu_B(y)\}\}$

$= \max\{\max\{\mu_A(x), \mu_B(x)\}, \max\{\mu_A(y), \mu_B(y)\}\} = \max\{\mu_C(x), \mu_C(y)\}$

Therefore, $\mu_C(xy) \geq \max\{\mu_C(x), \mu_C(y)\}$ for all x and y in F.

Also,

$\mathrm{V}_C(x+y) = \max\{\mathrm{V}_A(x+y), \mathrm{V}_B(x+y)\}$

$\leq \max\{\max\{\mathrm{V}_A(x), \mathrm{V}_A(y)\}, \max\{\mathrm{V}_B(x), \mathrm{V}_B(y)\}\}$

$= \max\{\max\{\mathrm{V}_A(x), \mathrm{V}_B(x)\}, \max\{\mathrm{V}_A(y), \mathrm{V}_B(y)\} = \max\{\mathrm{V}_A(x), \mathrm{V}_B(y)\}$

Therefore,$\mathrm{V}_C(x+y) \leq \max\{\mathrm{V}_C(x), \mathrm{V}_C(y)\}$ for all x and y in F.

And,

$\mathrm{V}_C(xy) = \min\{\mathrm{V}_A(xy), \mathrm{V}_B(xy)\}$

$\leq \min\{\max\{\mathrm{V}_A(x), \mathrm{V}_A(y)\}, \max\{\mathrm{V}_B(x), \mathrm{V}_B(y)\}\}$

$= \min\{\min\{\mathrm{V}_A(x), \mathrm{V}_B(x)\}, \min\{\mathrm{V}_A(y), \mathrm{V}_B(y)\}\} = \min\{\mathrm{V}_C(x), \mathrm{V}_C(y)\}$

Therefore, $\mathrm{V}_C(xy) \leq \min\{\mathrm{V}_C(x), \mathrm{V}_C(y)\}$ for all x and y in F.

Therefore, Z is an intuitionistic fuzzy ideal of a field F.

Hence,

Union of any two intuitionistic fuzzy ideal of a field F is an intuitionistic fuzzy ideal of F.

2.6 Theorem:

Union of two anti intuitionistic fuzzy ideals of a field F is also anti intuitionistic fuzzy ideal of F.

Proof:

Let A and B be two anti intuitionistic fuzzy ideal of F$\Rightarrow A^c$ and B^c are intuitionistic fuzzy ideal of F [by theorem 2.5]

$\Rightarrow A^c \cap B^c$ is intuitionistic fuzzy ideal of F $\Rightarrow (A \cup B)^c$ is intuitionistic fuzzy ideal of F $\Rightarrow A \cup B$ is anti intuitionistic fuzzy ideal of F.

2.7 Corollary:

Union of an arbitrary collections of anti intuitionistic fuzzy ideal of a field F is also anti intuitionistic fuzzy ideal of F.

III. CONCLUSION:

Recently the fuzzification of algebraic structures plays an fundamental role in many branches of mathematics and engineering. In this present paper we have expound a new kind of intuitionistic fuzzy ideal of field and we also express intuitionistic fuzzy subfield and intuitionistic fuzzy ideal. These structural properties will be accommodating to the readers as well as researchers to compose and further supplement of intuitionistic fuzzy field.

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