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Some types of ideals of a near ring

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Abstract—We give some basic concepts about some types of near rings, Also, we gave some examples and investigated the properties related to these concepts. Moreover, we studied the relationship among these types of ideals and some other types of ideals of a near ring. Also, we gave some examples and properties related to those concepts. Moreover, we studied some of the properties and relations between this type and other types of ideals in the near ring .we, Ideal, completely semi prime ideal, completely prime ideal, and some other basic concepts.

Keywords*—near ring , Prime Ideal*

I . NTRODUCTION

Near rings are one of the generalized structures of rings. The study and research on near rings are very systematic and continuous .In1905, L.E Dickson began the study of a near ring and later in 1930, Wieland has investigated it .Further, material about a near ring can be found [12]. In 1962, R.W. Gilmer introduced the concept of rings in which semi primary ideals are primary[20]. In 1970, W. L. M. Holcomb introduced the notions of primitive near rings [31].In 1977, G. Pilz, introduced the notion of a prime ideal of a near ring [12]. In 1988, N. G. Groenewald introduced of a completely (semi) prime ideal of a near ring [22].In 1990, G. L. Booth, N. G. Groenewald and S. Veldsan introduced the concept of an equiprime ideal [10]. In 1991, N.J.Groenewald introduced the notions of 3-(semi) prime ideals of a near ring [21]. In 2002, W.B.Vasantha and Asamy studied samarandache near ring [30]. In 2005, S.E. Atani and F. Farzalipour introduced the concept of a weakly primary ideals [28] . In 2007, P.Dheena and G.Satheesh Kumar introduced the notion completely 2-primal Ideal in near ring[25]. In 2010, A. O. Atag introduced the concept of IFP Ideals in near rings [4]. In 2011, H.H.Abbass and S.M.Ibrahem gave the notion of a completely semi prime ideal with respect to an element of a near ring [17].In 2012, H.H.Abbass and M.A. Mohammed gave the notion of a completely prime ideal with respect to an element of a near ring [16].IN 2015 H.H.Abbass and M.A.Obaid gave the notion On A Primary Ideal and Semi Primary Ideal tof a Near Ring[16] And also On A Primary Ideal With Respect To an Element of a Near Ring [15]In this paper we presented initial concepts of near ring with respect to we have provided some examples and investigated the characteristics related to these concepts and we introduced the notions of a primary ideal with respect to an element of a near ring and primary ideals ring with respect to an element in the near ring. Also, we gave some examples and investigated the properties related to these concepts.

2.NEAR RING

we mentionedsome definitions related to near ring and some we have provided some examples.

Definition (2.1)[12]:

A left near ring is a set N together with two binary operations "+" and "." such that

1. $(N,+)$ is a group (not necessarily abelian).

2. $(N, .)$ is a semi group .

3. $n_1 .(n_2 + n_3) = n_1 . n_2 + n_1 . n_3$, for all $n_1, n_2, n_3 \in N$.

Definition (2. 2)[30]:

Let N be a near ring. If $a . b = b . a$ for all $a, b \in N$ we say N is a commutative near ring.

Example (2.3) [29] :

Consider the set $N = \{0,1,2,3,4,5,6,7\}$ with addition and multiplication defined by the following tables.

+	0	1	2	3	4	5	6	7
0	0	1	2	3	4	5	6	7
1	1	2	3	0	5	6	7	4
2	2	3	0	1	6	7	4	5
3	3	0	1	2	7	4	5	6
4	4	7	6	5	0	3	2	1
5	5	4	7	6	1	0	3	2
6	6	5	4	7	2	1	0	3
7	7	6	5	4	3	2	1	0

.	0	1	2	3	4	5	6	7
0	0	0	0	0	0	0	0	0
1	0	1	2	3	4	5	6	7
2	0	2	0	2	0	0	0	0
3	0	3	2	1	4	5	6	7
4	0	4	2	6	4	0	6	2
5	0	5	0	5	0	5	0	5
6	0	6	2	4	4	0	6	2
7	0	7	0	7	0	5	0	5

is a near ring

Definition (2.4) [13]:

The near ring is called a zero symmetric if $0.x = 0$,for all $x \in N$.

Example (2.5) [14] :

The near ring $N=\{0,1,2,3\}$ with addition and multiplication defined by the following tables.

+	0	1	2	3
0	0	1	2	3
1	1	0	3	2
2	2	3	0	1
3	3	2	1	0

.	0	1	2	3
0	0	0	0	0
1	0	1	1	0
2	0	1	2	3
3	0	0	3	3

is a zero symmetric

Definition (2.6) [19]:

Let (N_1 , + , .) and (N_2 , +' , .') be two near rings. The mapping $f : N_1 \to N_2$ is called a near ring homomorphism if for all m, n $\in N_1$

$$f(m + n) = f(m) +' f(n) \quad \text{and} \quad f(m.\, n) = f(m) \cdot' f(n)$$

is a zero symmetric

Definition (2.7) [30]:

Let $\{Nj\}j\in J$ be a family of near rings , J is an index set and

$$\prod_{j\in J} N_j = \{(x_j) : x_j \in N_j, \qquad \text{for all } j \in J\}$$

Definition (2.8) [9]:

Let $f : N_1 \to N_2$ be a near rings homomorphism. Then the set
Ker f ={ $x\in N_1$: $f(x) = 0$} is called the kernel of N_1.

Definition (2.9) [30] :

A near ring N is called an integral domain if N has no zero-divisors.

Example (2. 10) [14] :

The near ring $N=\{0 ,1, 2\}$with addition and multiplication defined by the following tables.

+	0	1	2
0	0	1	2
1	1	2	0
2	2	0	1

.	0	1	2
0	0	0	0
1	0	2	1
2	0	1	2

is an integral domain.

Definition (2.11) [10]:

If for all a,b,c$\in N$, a.b.c=b.a.c , then N is called a left permutable near ring.

Example (2.12) [2]:

The near ring N={0,1,2,3} with addition and multiplication defined by the following tables.

+	0	1	2	3
0	0	1	2	3
1	1	2	3	0
2	2	3	0	1
3	3	0	1	2

.	0	1	2	3
0	0	0	0	0
1	0	0	0	0
2	0	0	2	2
3	0	0	2	2

is a left permutable.

3. IDEAL

In this section, we give some basic definitions for a primary ideal, a completely prime ideal, a completely semi prime ideal, x- completely prime ideal, x- completely semi prime ideal, prime ideal, 3~ prime ideal, 3~semiprime ideal, equiprime ideal, prime radical of N, a semi primary ideal, semi-symmetric, insertion of factors property (IFP), a weakly primary ideal, with some propositions, theorems and examples.

Definition (3.1)[30]:

Let (N,+,.) be a near ring. A normal subgroup I of (N,+) is called a left ideal of N if

1. $N.I \subseteq I$.
2. for all n , $n_1 \in N$ and for all i $\in I$, $n.(n_1 + i) - n.n_1 \in I$.

Where N is a normal subgroup of I if and only if $gNg{-1} = N$ for every $g \in I$.

Example (3.2) [30] :

Consider the near ring in example (2.3), the normal subgroup I = {0, 2,4, 6} is ideal of the near ring N.

Remark (3.3):

In this paper all near rings and ideals are left

,*Definition* (3.4) [22]:

An ideal I of a near ring N is called a completely semi prime ideal (C.S.P.I) of N, if $y^2 \in I$ implies $y \in I$, for all $y \in N$.

Definition (3.5) [17]:

Let N be a near ring and $x \in N$, I is called a completely semi prime ideal with respect to an element x denoted by (x-C.S.P.I) or (x- completely semi prime ideal) of N if for all y$\in$N, $x.y^2 \in I$ implies $y \in I$.

Example (3.6) [17] :

The ideal I = {0,1} of a near ring N in example (1.5) is a 3-C.S.P.I of N.

Definition (3.7)[22]:

An ideal I of a near ring N is called a completely prime ideal denoted by (C. P.I) of N, if $x.y \in I$ implies $x \in I$ or $y \in I$.

Definition (3.8)[14]:

Let N be a near ring and $x \in N$, I is called a completely prime ideal with respect to an element x denoted by (x-C.P.I) or (x- completely prime ideal) of N if for all $y,z \in N$, $x.y.z \in I$ implies $y \in I$ or $z \in I$.

Example (2.9) [14] :

The ideal I = {0,1} of a near ring N in example (1.5) is a 3-C. P.I of N.

Proposition (3.10) [14]:

Let N be a near ring with multiplicative identity e′. Then I is e′- C.P.I of the near ring N if and only if I is a C.P.I of N.

*Proposition (*3.11) [14]:

Every C.P.I of a near ring N is a C.S.P.I of N.

Proposition (3.12)[14]:

Let N be a near ring and $x \in N$. Then every completely prime ideal with respect to an element x of N is a completely semi prime ideal with respect to an element x.

Definition (3.13)[14]:

The near ring N is called a completely prime ideals near ring with respect to an element x, denoted by (x- C.P.I near ring), if every ideal of a near ring N is an x-C.P.I of N, where $x \in N$.

Example (3.14)[14] :

The near ring $N=\{0,1,2,3\}$ with addition and multiplication defined by the following tables.

.	0	1	2	3
0	0	0	0	0
1	0	1	2	3
2	0	1	2	3
3	0	1	2	3

+	0	1	2	3
0	0	1	2	3
1	1	0	3	2
2	2	3	0	1
3	3	2	1	0

is 1-C.P.I near ring, since all ideals of N, $I_1=N$,$I_2=\{0\}$ are 1-C.P.I of N since for all $y, z \in N$, $1.(y.z) \in Ii$ implies $y \in Ii$ or $z \in Ii$ and $i \in \{1,2\}$.

Definition (3.15) [11]:

If I_1 and I_2 are ideals of a near ring N, then $I_1 . I_2 = \{i_1 . i_2 : i_1 \in I_1 , i_2 \in I_2 \}$.

Definition (3.16) [31]:

An ideal I of a near ring N is called a prime ideal if for every ideals I_1, I_2 of N such that $I_1 . I_2 \subseteq I$ implies $I_1 \subseteq I$ or $I_2 \subseteq I$.

Example (3.17) [14]:

The near ring $N=\{0,1,2,3\}$ with addition and multiplication defined by the following tables.

+	0	1	2	3
0	0	1	2	3
1	1	0	3	2
2	2	3	0	1
3	3	2	1	0

.	0	1	2	3
0	0	0	0	0
1	0	1	1	0
2	0	1	2	3
3	0	1	3	2

The ideal $I = \{0,1\}$ of the near ring N is a prime ideal of N.

Definition (3.18) [21]:

An ideal I of a near-ring N is called a 3~ prime ideal if for all $a, b \in N$, $aNb \subseteq I$ *implies* $a \in I$ *or* $b \in I$.
*Example (*3.19)[21];

Consider the near ring N in example (3.17) , the ideal $I = \{0,1\}$ is a 3~ prime ideal of N, since for all $a , b \in N$, $aNb \subseteq I$ implies $a \in I$ *or* $b \in I$.

Definition (3.20) [21]:

An ideal I of a near ring N is called a 3~semiprime ideal if for all $a \in N$, $aNa \subseteq I$ implies $a \in I$.

Example (3.21)[21]

Consider the near ring N in example (3.17),the ideal $I = \{0, 1\}$ is a 3~semi prime ideal of N, since for all $a \in N$, $aNa \subseteq I$ implies $a \in I$.

Proposition (3.22)[14]:

Every 3~prime ideal of a near ring N is a 3~semi prime.

Remark (3.23)[30]:

Every ring is a near ring.

Definition (3.24) [1]:

Let I be an ideal of a ring R. Then I is called a primary ideal of R, if $\forall x,y \in R$, $x.y \in I$ implies $x \in I$ or $y^m \in I$, for some $m \in Z^+$, denoted by Pr.I of R.

Definition (3.25) [15].

Let I be an ideal of a near ring N. Then I is called a primary ideal of N, if $x,y \in N$, $x.y \in I$ implies $x \in I$ *or* $y^m \in I$, for some $m \in Z^+$, denoted by Pr.I of N.

Definition (3.26)[16]:

Let N be a near ring and $x \in N$, I is called a primary ideal with respect to an element x denoted by (x- Pr.I) or (x-primary ideal) of N if for all $y,z \in N$, $x.y.z \in I$ implies $y \in I$ or $z^m \in I$ for some $m \in Z^+$.

Example (3.27)[16]

Consider the near ring N in example (2.3), the ideal $I = \{0,2,4,6\}$ is 3-Pr-I of the near ring N but isn't 2-Pr-I of N since $2.(1.1) = 2 \in I$ but $1 \notin I$, and $1^m \notin I$, for all $m \in Z^+$.

Definition (3.28) [25]:

An ideal I of N is called left symmetric if $x.y.z \in I$ implies $y.x.z \in I$.

Example (3.29) [25]

Consider the near ring N in example (1.5), the ideal $I = \{0,1\}$ is a left symmetric since for all $x , y , z \in N$ and $x.y.z \in I$ $\Rightarrow y.x.z \in I$.

Theorem (3.30) [14]:

Let I be a left symmetric ideal of a near ring N. Then I is a 3~prime ideal of a near ring N if and only if I is an x-C.P.I of N, for all $x \in N$

Corollary (3.31) [14]:

Every left symmetric ideal of an x-C.P.I near ring N is a 3~prime ideal of N, where $x \in N$.

Proposition (3.32) [14]:

Let N be a 3~prime near ring and $\{0\}$ be a left symmetric of N. Then $\{0\}$ is an x-C.P.I of N , for all $x \in N - \{0\}$.

Definition (3.33) [10]:

An ideal I of a near ring N is called an equiprime ideal, if $a \in N\text{-}I$ and $x, y \in N$ such that $a.n.x - a.n.y \in I$, for all $n \in N$, *then* $x - y \in I$.

Definition (3.34) [12]:

If the zero ideal of N is (3~prime , equiprime), then N is called a (3~prime , equiprime , 3~primitive) near ring respectively.

Proposition (3.35*)* [14] *:*

Let I be an equiprime ideal of N. Then I is an x-C.P.I of N , for all $x \in N - I$.

Proposition (3.36*) [14:]*

Let N be an equiprime near ring. The $\{0\}$ is an x-C.P.I, for all $x \in N - \{0\}$.

Corollary (3.37)[14]:

Every an equiprime ideal of a near ring N is an x-C.S.P.I of $x \in N - I$. N, for all

Definition (3.38) *[9]:*

Let I be ideal of N. Then I is called a completely equiprime ideal of N if $a, x, y \in N$ with $ax - ay \in I$ implies $x - y \in I$ *or* $a \in \bar{I}$, where $\bar{I}$ is the largest ideal of N contained in I.

Definition (3.39) [9]*:*

Let N is a near ring and I a proper ideal of N. Then I is called a strongly equiprime ideal of N if for each $a \in N\text{-}I$, there exists a finite subset F of N such that $x, y \in N$ and $afx - afy \in I$, for all $f \in F$, then $x - y \in I$.

Corollary (3.40) [9]:

Let I be a completely equiprime ideal of N. Then I is an equiprime ideal of N.

Remark (3.41):[9]:

If I is a strongly equiprime ideal of N, then I is an equiprime ideal of N.

Proposition (3.42)[9]:

Let I be a completely equiprime ideal of N. Then I is a strongly equiprime ideal of N.

Corollary (3.43) [9] :

Let N be an equiprime near ring and I is a proper ideal of N. Then I is an equiprime near ring.

Proposition (3.44) [9] :

Let N be zero symmetric and a 3~primitive near-ring. Then N is an equiprime near ring.

Definition (3.45) [30]:

Let $\{Nj\}_{j \in J}$ be a family of near rings , J is an index set and

$$\prod_{j\in J} N_j = \{(x_j) : x_j \in N_j, \quad \text{for all } j \in J\}$$

be the directed product of Nj with the component wise defined operations '+' and '.', is called the direct product near ring of the near rings Nj ..

Theorem (3.46) [18]:

Let $f : (N_1 , + , .) \rightarrow (N_2 , +' , .')$ be a homomorphism

1. If I is an ideal of a near ring N_1, then $f(I)$ is an ideal of a near ring N_2.
2. If J is an ideal of a near ring N_2, then $f^{-1}(J)$ is an ideal of a near ring N_1.

Remark (3.47) [21]:

Let $\{I_j\}_{j\in J}$ be a family of ideals of a near ring *N*, then

1. $\bigcap_{j\in J} I_j$ is an ideal of N.
2. If $\{I_j\}_{j\in J}$ is a chain, then $\bigcup_{j\in J} I_j$ is an ideal of N.

Definition (3.48) [25]:

The intersection of all prime ideals is called a prime radical of *N* is denoted by *P(N).*

Definition (3.49) [6]:

The equiprime radical of *N* is defined $P_e(N) = \cap\{ I \mid I$ equiprime ideal of N }.

Definition (3.50) [9]:

The completely equiprime radical of N is defined $P_{ce}(N) = \cap\{ I$ proper ideal of $N \mid I$ is a completely equiprime ideal of $N\}$.

Definition (3. 51) [9]:

The strongly equiprime radical $P_{se}(N)$ of a near ring *N* is defined by $P_{se}(N) = \cap \{I$ proper ideal of $N \mid I$ is a strongly equiprime ideal of $N\}$

Definition (3.52) [32]:

An ideal I of *N* is said to be a semi-symmetric ideal if $x^n \in I$ for some positive integer n implies $\langle x\rangle n \subseteq I$.

Definition (3.53) [32]:

A near ring *N* is said to be a semi-symmetric near ring if {0} is a semi symmetric ideal of *N*.

Definition (3.54) [26]:

Let *N* be a near ring and be I a subset of *N*. We write, radical of *I*, and denoted by $\sqrt{I} = \{x\in N : x^n \in I$, for some $n \in Z^+ \}$.

Example (3.55):[27]

The near ring *N*={0,1,2, 3} with addition and multiplication defined by the following tables.

+	0	1	2	3
0	0	1	2	3
1	1	2	3	0
2	2	3	0	1
3	3	0	1	2

.	0	1	2	3
0	0	0	0	0
1	0	0	0	0
2	0	0	0	0
3	0	1	2	3

The ideal *I*={0} then $\sqrt{I}$ ={ 0,1,2}.

Definition (3.56) [7] :

Let *N* be a near ring and I an ideal of *N*. We show that if all the prime ideals minimal over *I* are finitely generated, then there are only finitely many prime ideals minimal over *I*.

Proposition (3.57) [32]:

If *I* is a semi-symmetric ideal of a near ring *N*, then every minimal prime of *I* is a completely prime.

*Corollary (*3.58)[32]:

An ideal *I* of near ring *N* is a completely prime ideal if and only if it is prime and semi-symmetric.

Definition (3.59) [25]:

An ideal *I* of *N* is said to have the insertion of factors property (IFP), *if* $x.y \in I$ implies $x.N.y \subseteq I$ for all $x, y \in N$.

Remark (3.60) [30]:

Let *I* be an ideal of a near ring *N* .Then the factor near ring *N/I* is defined as in case of rings.

Proposition (3.61) [24]:

If *I* is an IFP-ideal and a 3~prime ideal of *N*, then *I* is a completely prime ideal.

Proposition (3.62)[4]:

Let *N* be a zero-symmetric near ring and *I* is a completely prime ideal of *N*. Then I is an IFP-ideal.

Proposition (*3.63)[5]:*

Let *I* be an equiprime ideal of *N*. If I has IFP then *I* is a completely prime ideal of *N.*

Proposition (3.64) [3]:

Let *N* be a left permutable near ring and *I* a proper ideal of *N* be such that $N.I \subseteq I$. Then *I* is 3~prime if and only if *I* is completely prime.

Definition (3.65) [23]:

Let *I* be a proper ideal of *N*. Then we define the annihilator of *I* in *N*
l(I) = {x∈N : x.I = 0}.

Definition (3. 66) [28]:

Let *I* be an ideal of a ring *R*. Then *I* is called a weakly primary ideal of *R*, if ∀*x,y*∈*R* , *0≠x.y*∈*I* implies *x*∈*I or* y^m ∈I, for some *m*∈ Z^+denoted by a weakly Pr.I of R.

Remark (3.67) [28]:

Every primary ideal of a ring is weakly primary.

Proposition (3.68) [28]:

Let *I* a non-zero a proper ideal of integral domain. Then *I* is a weakly primary if and only if *I* is a primary.

Definition (3.69) [20]

Let *I* be an ideal of a *R*. Then *I* is called a semi primary ideal of *R*, *if* ∀*x,y*∈*R*, *x.y*∈*I* implies $x^m \in I$ *or* y^m ∈*I*, for some *m*∈ Z^+, denoted by semi Pr.I of *R*.

4.CONCLUSION

we found relationship among these types of ideals of a near ring and Also, some properties related to these concepts. This leads to the study of relationships, characteristics among other ideals of a near ring, which are not mentioned in this article.

REFERENCES

[1] A. K.Jabbar and C. A. Ahmed, "On Almost Primary Ideals " International Journal of Algebra, Vol. 5, No. 13,pp: 627 - 636, 2011.

[2] A.O.Atag and H. Altındis,"S-special near-rings" , J.Inst. Mat Comp. Sci (Math. Ser), Vol.19, pp:205 – 210, 2006.

[3] A. O. Atag and N. J. Groenewald" Primeness in Near Rings Multiplicative Semi-Group Satisfying the Three Identities", J. Math Sci: Advances and Applications, Vol. 2, No.1, pp: 137-145, 2009.

[4] A. O. Atag," IFP Ideals in Near-rings" , Hacet. J. Math. Stat, Vol.39, pp:17 – 21,2010.

[5]] B. S. Kedukodi, S.Bhavanari and S.P. Kuncham " C-Prime Fuzzy Ideals of Near Rings", Soochow, J. Math .,Vol. 33, No. 4, pp: 891- 901, 2007.

[6] B. S.Kedukodi ,S. P. Kuncham and S. Bhavanari" Equiprime,3~prime and c-prime fuzzy ideals of near rings" Soft Comput , Vol. 13, pp:933–944, 2009.

[7] D. D. Anderson" A Note on Minimal Prime Ideals" proceedings of the American mathematical society Vol .122, No.1, 1994.

[8] G.Birkenmeier and H.Heatherly,"Medial near-rings " Monatsh.Math. Vol.107, pp:89–110, 1989.

[9] G. L. Booth and K. Mogae , " Equiprime Ideal near-rings" M.Sc thesis University of the Nelson Mandela Metropolitan December 2008.

[10] G. L. Booth, N. J. Groenewald and S. Veldsman A Kurosh-Amitsur, "Prime Radical of Near rings" ,Comm. Algebra , Vol.18, No.9, pp:3111 – 3122,1990.

[11] G.Mason ,"Fully Idempotent Near ring and Sheaf Representation " ,Canda , , Vol.21, No.1, pp:145 – 152,1995.

[12] G.Pilz,"Near ring", North Hollanda Publ.and co., 1977.

[13] H.A.S.Abujabal,M.A.Obaid and M.A.Khan," On Structur and Commutativity of Near Rings ", Antofagasta- Chile , Vol 19, No. 2, PP:113- 124,2000

[14] H.H.Abbass, M.A. Mohammed , "On Completely Prime Ideal With Respect An Element Of A Near Ring", J. kerbala. university , vol. 10 No.3 pp:285- 301 . 2012

[15] H.H.Abbass, M.N.Obaid,On A Primary Ideal and Semi Primary Ideal tof a Near Ring,Journal of Kerbala University, 14 (2), pp. 163-170, 2016.

[16] H.H.Abbass, M.N. Obaid ," On A Primary Ideal With Respect To an Element of a Near Ring ", Global Journal of Mathematics, Vol.4, No.2,pp: 412-419 ,2015.

[17] H.H.Abbass, S.M.Ibrahem ," On Completely Semi Prime Ideal with Respect to an Element of a Near Ring" , J. Kufa.. Math and Computer, Vol.1, No.3, pp.1- 7, 2011

[18] M.S.Davender,"Fuzzy Subfields", Fuzzy and Set Systems , Vol. 37,pp:383-388,1990.

[19] M.S.Davender,"Fuzzy homorphism of near rings", Fuzzy and Set Systems , Vol. 45,pp: 83-91,1992.

[20] R.W. Gilmer, "Rings in which Semi Primary Ideals are Primary" Pacific Journal of Mathematics, Vol. 12, No. 4, 1962.

[21] N.J.Groenewald"Different Prime Ideals in Near-ring" Comm.ALgebra, Vol. 19, No. 10, pp:2667-2675,1991.

[22] N.J.Groenewald," The completely prime radical in near rings",Acta Math .Hung ., Vol.33, pp:301-305,1988.

[23] N.J. Groenewald, W.A. Olivier and L. Godloza "On Class Pairs an Radicals of Near-rings" , University of Port Elizabeth, 2004.

[24] N. V. Nagendram, T. V. Pradeep Kumar and Y. V. Reddy "IFP Ideal in Noetherian δ-Regular Near Rings" Int. J.Contemporar Math Vol. 2, No. 1, 2011.

[25] P.Dheena and G.Satheesh Kumar ,"Completely 2-primal Ideal in near ring " , India,2007.

[26] P.Dheena , Ageneralization of Strongly Regular near ring " , India,J.pure appl.Math,vol.20,no.1.pp:58-63,1989.

[27] S.D. Kim and H.S. Kim "On Fuzzy Ideals of near ring " , Bull. Korean Math. Soc. 33 , No. 4, pp: 593–601, 1996.

[28] S.E. Atani and F. Farzalipour "On Weakly Primary Ideals " , J.Math. Georgian ,Vol. 12, No. 3, pp:423– 429, 2005.

[29] Taşdemir F. , Atagun A.O., Altindiş H.},Different Prime N-Ideals And Ifp N-Ideals, INDIAN JOURNAL OF PURE and APPLIED MATHEMATICS,vol.44, pp.527-542, 2013.

[30] W.B.Vasantha and Kandasamy,"Samarandache near ring" United States of America,pp:20-30,pp:69-71,158,2002

[31] W.L.M.Holcombe, " Primitive near rings" ,Doctoral Dissertation, University of Leeds, 1970.

[32] Y. V. Reddy and C. V. L. N. Murty, "Semi-Symmetric Ideals In Near Rings" Indian J. Pure appl. Math ., Vol. 16. No.1, pp:17-21, 1985

