

# ON SMARANDACHE ALGEBRAIC STRUCTURES. V : TWO CLASSES OF SMARANDACHE RINGS

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**Abstract** . In this paper we construct two classes of Smarandache rings .

**Key words** . Smarandache algorithm , Smarandache ring .

Let  $R$  be a ring . If  $R$  contains a proper subset , which is a field under the same operations , then  $R$  is called a Smarandache ring (see [4]) . For example , by the result of [3] ,  $R=C(6,60)=\{0,6,12,18,24,30,36,42,48,56\} \pmod{60}$  is a ring . Since the proper subset  $\{0,12,24,36,48\} \pmod{60}$  of  $C(6,60)$  is a field ,  $C(6,60)$  is a Smarandache ring .

Under the definitions and notions of [1] , [2] and [3] , we now construct two classes of Smarandache rings as follows .

**Theorem 1** . If  $m$  is a prime and  $a$  is a primitive root modulo  $m$  , then  $B(a,n)$  is a Smarandache ring .

**Theorem 2** . If  $t$  has a prime divisor  $p$  with  $p \nmid d$  , then  $C(a,n)$  is a Smarandache ring .

**Proof of Theorem 1** . Since  $B(a,n)$  has a proper subset  $\{0, a^e, 2a^e, \dots, (m-1)a^e\} \pmod{n}$  , which is a field . Thus , it is a Smarandache ring .

**Proof of Theorem 2** . Since  $C(a,n)$  has a proper subset  $\{0, at/p, 2at/p, \dots, (p-1)at/p\} \pmod{n}$  , which is a field . Thus , it is a Smarandache ring .

## References

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