

# On finiteness conditions on near-rings and near-ring groups: some special types

*K. C. Chowdhury*

Gauhati University, Guwahati 781014, Assam, India []

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A. W. Goldie dealt the structure of ring with ascending chain condition on annihilators and having no infinite direct sum of ideals, when he discussed the structure of semiprime rings. These results are still relevant due to its elegance. Here we review and establish some properties of near-rings as well as some near-ring groups with same character. In the first case, we just try to extend, with some innovative way some results of Goldie rings and for the second part we basically try to establish what we claim in an elegant way the novel and the most interesting generalization of what we'll show in the first case to the near-ring groups, the so-called Goldie structure. We establish the results in such a way that the relevancy and elegance of these may be determined with accommodating justification on such structures. In case of a near-ring group over a duo near-ring, reveals many interesting results including the descending chain condition (dcc) on annihilators on subsets of  $E$  in  $N$ , when  $E$  is a ps-strongly semiprime  $N$ -group such that  $N$  has no infinite direct sum of left ideals and an essential left ideal of  $N$  is strictly essential as a left  $N$ -subgroup of  $N$ .

## Main Results:

- A strongly semi prime near-ring  $N$  with acc on left annihilators has no non-zero nil left  $N$ -subset of  $N$ .
- If  $N$  is a strongly semi primenear-ring with acc on left annihilators then  $Z_l(N) = 0$
- Let  $N$  be a strongly semi prime left Goldie near-ring such that essential left ideal is strictly essential left  $N$ -subgroup of  $N$  then  $N$  satisfies the dcc on left annihilators.
- If  $N$  is a strongly semi prime left Goldie near-ring with distributively generated leftannihilators and essential left ideal is strictly essential left  $N$ -subgroup of  $N$ , then there exists an element  $e \in N$  such that  $l(e) = 0$ .
- If  $E$  is a ps-strongly semi-prime duoacc  $N$ -group, then  $E$  has no non-zero ps-nil  $N$ -subset.
- If  $E$  is a ps-strongly semi-prime  $N$ -group  $E$ , then  $Z_l(E) = 0$ .
- If  $E$  is a ps-strongly semi-prime  $N$ -group such that  $N$  has no infinite direct sum of left ideals and an essential left ideal of  $N$  is strictly essential as  $N$ -subgroup of  $NN$  also, then the annihilators of subsets of  $E$  in  $N$  satisfy the dcc.

- Let  $N$ -group  $E$  be as in Theorem 3.2.3 and the annihilators of subsets of  $E$  in  $N$  are distributively generated, then there exists  $e \in E$  such that  $\text{Ann}(e)=0$ .

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