Kim, Hong Kee

On rings with ascending chain conditions on right annihilators. (English) Zbl 1077.16023

EAMJ, East Asian Math. J. 20, No. 2, 177-186 (2004).

Let R be an associative ring with identity. The ring R is called: (i) orthogonally finite if R has no infinite sets of non-zero orthogonal idempotents; (ii) right Utumi if R is right non-singular and every non-essential right ideal of R has non-zero left annihilator; (iii) of bounded index (of nilpotence) if there exists a positive integer n such that $a^n = 0$ for each nilpotent element $a \in R$; (iv) right p-injective if for any principal right ideal I of R, any homomorphism $I \to R$ extends to an endomorphism of R.

The author shows that R has ACC on right annihilators if and only if R is orthogonally finite and R has ACC on right annihilators containing no non-zero idempotents. Also, the property that R has ACC on right annihilators is characterized for several types of rings R, such as right non-singular right p-injective, right Utumi or semiprime of bounded index.

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MSC:

16P60 Chain conditions on annihilators and summands: Goldie-type conditions
16D80 Other classes of modules and ideals in associative algebras
16D50 Injective modules, self-injective associative rings

Keywords:

countable rings; ascending chain condition on annihilators; orthogonal idempotents; right Utumi rings; right p-injective rings