

ГОДИШНИК НА СОФИЙСКИЯ УНИВЕРСИТЕТ „СВ. КЛИМЕНТ ОХРИДСКИ“

ФАКУЛТЕТ ПО МАТЕМАТИКА И ИНФОРМАТИКА

Том 97

ANNUAIRE DE L'UNIVERSITE DE SOFIA „ST. KLIMENT OHRIDSKI“

FACULTE DE MATHÉMATIQUES ET INFORMATIQUE

Tome 97

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PARTITIONED GRAPHS  
AND DOMINATION RELATED PARAMETERS

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Let  $G$  be a graph of order  $n \geq 2$  and  $n_1, n_2, \dots, n_k$  be integers such that  $1 \leq n_1 \leq n_2 \leq \dots \leq n_k$  and  $n_1 + n_2 + \dots + n_k = n$ . Let for  $i = 1, \dots, k$ :  $\mathcal{A}_i \subseteq \mathcal{K}_{n_i}$  where  $\mathcal{K}_m$  is the set of all pairwise non-isomorphic graphs of order  $m$ ,  $m = 1, 2, \dots$ . In this paper we study when for a domination related parameter  $\mu$  (such as domination number, independent domination number and acyclic domination number) is fulfilled  $\mu(G) = \mu(\cup_{i=1}^k \langle V_i, G \rangle)$  for all vertex partitions  $\{V_1, V_2, \dots, V_k\}$ ,  $k \geq 2$ , of a vertex set of  $G$  such that  $\langle V_i, G \rangle$  is isomorphic to some a member of  $\mathcal{A}_i$ ,  $i = 1, 2, \dots, k$ . In the process several results for acyclic domination vertex critical graphs are presented. Results for independence number of double vertex graphs are obtained.

**Keywords:** domination number, acyclic domination number, independent domination number, independence number, double vertex graph

**2000 MSC:** 05C69, 05C70, 05C75

*Received September 15, 2004*

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