Strong and Weak Domination, Full Sets and Domination Balance in Semigraphs

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Abstract

Sampathkumar [1] introduced a new type of generalization to graphs, called **Semigraphs**. A **semigraph** $G = (V, X)$ on the set of vertices V and the set of edges X consists of n-tuples $(u_1, u_2, \ldots, u_n)$ of distinct elements belonging to the set V for various $n \geq 2$, with the following conditions : (1) Any n-tuple $(u_1, u_2, \ldots, u_n) = (u_n, u_{n-1}, \ldots, u_1)$ and (2) Any two such tuples have at most one element in common.

S. S. Kamath and R. S. Bhat [3] introduced domination in semigraphs. Two vertices u and v are said to a-dominate each other if they are adjacent. A set $D \subseteq V(G)$ is an **adjacent dominating set** (ad-set) if every vertex in $V - D$ is adjacent to a vertex in D. The minimum cardinality of an ad-set D is called **adjacency domination number of** G and is denoted by γ_a. A vertex u strongly (weakly) a-dominates a vertex ν if, $\deg_a u \geq \deg_a v$, ($\deg_a u \leq \deg_a v$) where $deg_a u$ is the number of vertices adjacent to u. A set $D \subseteq V(G)$ is a **strong (weak) adset** [sad-set (wad-set)], if every vertex in $V - D$ is strongly (weakly) a-dominated by at least one vertex in D. This paper presents some new results on strong (weak) domination in semigraphs.

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