

Domination Critical 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, \dots, u_n) of distinct elements belonging to the set V for various $n \geq 2$, with the following conditions : (1) Any n -tuple $(u_1, u_2, \dots, u_n) = (u_n, u_{n-1}, \dots, u_1)$ 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 .

$\gamma_a(G)$ may increase or decrease by the removal of a vertex or an edge from G .

A vertex v of a semigraph G is said to be γ_a - **critical** if $\gamma_a(G - v) \neq \gamma_a(G)$; if $\gamma_a(G - v) = \gamma_a(G)$, then v is γ_a - **redundant**. The main objective of this paper is to study this phenomenon on the vertices and edges of a semigraph.

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