PARTITION DIMENSION OF AMALGAMATION OF STARS GRAPH $nS_{m,k}$

Abstract

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Given graph $G = (V,E)$, $v \in V(G)$ and $S \subset V(G)$. The distance between $v$ and $S$ is $d(v,S) = \text{min}\{ d(v,x) \mid x \in S \}$, where $d(v,x)$ is the distance from $v$ to $x$. Let $\Pi = \{S_1, S_2, ..., S_k\}$ as the partition of $V(G)$. The representation of $v$ with respect to $\Pi$ is the $k$-vectors $r(v \mid \Pi) = (d(v, S_1), d(v, S_2), ..., d(v, S_k))$. The partition $\Pi$ is called as a resolving partition of $V(G)$ if $r(u \mid \Pi) \neq r(v \mid \Pi)$ for every two different vertices of $V(G)$. The partition dimension of $G$, written as $pd(G)$ is the minimum $k$ for which there is a resolving $k$-partition. The amalgamation of star graphs $nS_{m,k}$ obtained from $n$ copies of amalgamation stars $S_{m,k}$ by connecting a leaf from each $S_{m,k}$ through a path. The result of the research is

$$pd(nS_{m,k}) = \begin{cases} k, & 1 \leq n \leq \left\lfloor \frac{k}{m-1} \right\rfloor \\ k + 1, & \text{lainnya} \end{cases}$$

Keyword : graph, distance, partition, partition dimension, amalgamation of stars,