A Characterization of k-Uniform DCSL Graphs

Abstract

Let an injective function $f : V(G) \rightarrow 2X$, where $V(G)$ is the vertex set of a graph $G$ and $2X$ is the power set of a nonempty set $X$, be given. Consider the induced function $f \Theta : V(G) \times V(G) \rightarrow \{\Phi\}$ defined by $f \Theta (u, v) = f(u) \Theta f(v)$, where $f(u) \Theta f(v)$ denotes the symmetric difference of the two sets. The function $f$ is called a k-uniform dcsl (and $X$ a k-uniform dcsl-set) of the graph $G$, if there exists a positive constant $k$ such that $|f \Theta (u, v)| = kd_G(u, v)$, where $d_G(u, v)$ is the length of a shortest path between $u$ and $v$ in $G$. If a graph $G$ admits a k-uniform dcsl, then $G$ is called a k-uniform dcsl graph. In this paper, we initiate a study on 2-uniform dcsl graphs and we establish a characterization for a graph to be k-uniform dcsl.

References


Index Terms

Computer Science
Algorithms

Keywords

k-uniform distance compatible set-labeling, k-uniform dcsl index