A Characterization of k-Uniform DCSL Graphs

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Abstract

Let an injective function \( f : V(G) \to 2X \), 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 \( f \oplus : V(G) \times V(G) \to \{\emptyset\} \) defined by \( f \oplus (u, v) = f(u) \oplus f(v) \), where \( f(u) \oplus f(v) \) 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 \( |f \oplus (u, v)| = kd_{G}(u, v) \), 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 dscl 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