The Edge metric dimension of multiple wheel graphs

Mohammad Bataineh

Department of Mathematics, University of Sharjah, UAE

Let $G = (V, E)$ be a connected graph, with $v \in V$ and $e = uw \in E$, then $d_G(e, v) = min\{d_G(u, v), d_G(w, v)\}$ is the distance of a vertex v from an edge e. A vertex $w \in V$ distinguishes two edges $e_1, e_2 \in E$ if $d_G(w, e_1) \neq dG(w, e_2)$. A set S of vertices in a connected graph G is an edge metric generator for G if every two edges of G are distinguished by some vertices of S. The smallest cardinality of an edge metric generator for G is called the edge metric dimension and is denoted by $edim(G)$. A multiple wheel graph $W_{1,n,k}$ is composed of k cycles C_n along with a central vertex x such that, x is adjacent to each of the vertices of C_1 and the corresponding vertices of the cycles C_i, C_{i+1} are also adjacent such that $1 \leq i \leq (k-1)$. This article, discusses the edge metric dimension of the Double wheel graph and extends the results to the multiple wheel graph with k wheels.

Keywords: edge metric dimension, edge metric generator, double wheel.