P4 – Decomposition in Boolean Function Graph B(KP, L(G), INC) of a Graph

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ABSTRACT

Graph discussed in this paper are undirected and simple graphs. A graph with p vertices and q edges is denoted by G(p,q). The corona G1 *o* G2 of two graphs G1 and G2 is defined as the graph obtained by taking one copy of G1 (which has P1 vertices) and P1 connecting the ith vertex of G1 to each vertex in the ith copy of G2 after making copies of G2. For any graph G, G *o* K1 is denoted by G+. A decomposition of a graph G is a family of edge-disjoint subgraphs{G1, G2, …, Gk} such that E(G) = E(G1) ∪E(G2) ∪ … ∪E(Gk). If each Gi is isomorphic to H, for some subgraph H of G, then the decomposition is called a H-decomposition of G. In particular, a P4-decomposition of a graph G is a partition of the edge set of G into paths of length 3. G is said to be P4-decomposable in this instance. Let V(G) and E(G) stand for the vertex set and edge set of any graph G, respectively. The graph of G's Boolean function B(," L(G)"), NINC) has two vertex sets, V(G) and E(G), and it has two vertices in B($\overline{Kp}$, $\overline{L(G)}$, NINC) are adjacent if and only if they correspond to two non-adjacent edges of G or to a vertex and an edge not incident to it in G. For brevity, this graph is denoted by B3(G). The Boolean function graph B(KP, L(G), INC) of G is a graph with vertex set V(G)∪E(G) and two vertices in B(KP, L(G), INC) are adjacent if and only if they correspond to any two vertices of G, any two adjacent edges of G (or) to a vertex an edge incident to it in G. For brevity, this graph is denoted by $\overline{B_3}(G)$. In this paper, P4- Decomposition in Boolean Function Graph B(KP, L(G), INC) of some standard graphs and corona graphs are obtained.

Keywords: Boolean Function graph, Edge Domination Number, Decomposition

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