An Induced P₃-packing k-partition Number for Benzenoid System

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ABSTRACT

A subfield of chemistry known as mathematical chemistry uses mathematical techniques to discuss chemical structures. A chemical graph is the representation of a chemical/molecular structure in terms of a graph, such that each of its atoms is represented by a vertex with an edge representing a bond/multiple bonds between two of its atoms. Such a graph G = (V,E) is simple, undirected, finite, and connected. The order and size of G are, respectively, the number of vertices and edges in it. For the connection of vertex set V (G) and edge set E (G) of a graph, there must be an existence of linking between any pair of vertices in G. A benzenoid system is a combinatorial object obtained by arranging congruent regular hexagons in a plane so that two hexagons are either disjoint or have a common edge. Mathematically, assembling in predictable patterns is equivalent to packing in graphs. An H-packing of a graph G is the set of vertex disjoint sub graphs of G, each of which is isomorphic to a fixed graph H. In this paper we determine a H-packing and an induced H-packing k-partition number for Rhombic Benzenoid System, triangular benzenoid system and Benzene Ring-Molecular graph of P [m,n] with H $\simeq$ P_3. A chemical graph is the representation of a chemical/molecular structure in terms of a graph, such that each of its atoms is represented by a vertex with an edge representing a bond/multiple bonds between two of its atoms. Such a graph $G = (V, E)$ is simple, undirected, finite, and connected. The order and size of G are, respectively, the number of vertices and edges in it. For the connection of vertex set $V(G)$ and edge set $E(G)$ of a graph, there must be an existence of linking between any pair of vertices in G. A benzenoid system is a combinatorial object obtained by arranging congruent regular hexagons in a plane so that two hexagons are either disjoint or have a common edge. Mathematically, assembling in predictable patterns is equivalent to packing in graphs. An H-packing of a graph G is the set of vertex disjoint sub graphs of G, each of which is isomorphic to a fixed graph H. In this paper we determine a H-packing and an induced H-packing k-partition number for Rhombic Benzenoid System, triangular benzenoid system and Benzene Ring-Molecular graph of $P[m,n]$ with $H \simeq P_3$.

Keywords: P₃-Packing, Induced H-packing k-partition, Rhombic Benzenoid System