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PARTITION DIMENSION OF BENZENOID SYSTEMS AND HEXAGONAL CACTUS CHAINS

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Abstract: This paper determines the partition dimension of selected hexagonal graph structures, namely pericondensed benzenoid systems R_n, B_n, and hexagonal cactus chains PC_n, OC_n, and MC_n. Using combinatorial techniques, we obtain exact partition dimensions for these classes. Our findings provide valuable insights into their structural properties and have applications in areas such as molecular chemistry and computational biology.

Keywords and Phrases: Pericondensed benzenoid system, hexagonal catus chains, partition resolving set, partition dimension.

2020 Mathematics Subject Classification: 05C12, 05C90, 05C15, 05C62.

1. Introduction

Chemical graph structures such as pericondensed benzenoid systems and hexagonal cactus chains are used to model aromatic compounds. In these graphs, vertices represent atoms and edges represent chemical bonds. Pericondensed benzenoid systems form hexagonal grids corresponding to polycyclic aromatic hydrocarbons,