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F -INDEX AND HYPER-ZAGREB INDEX OF k^{th} GENERATED TRANSFORMATION GRAPHS

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ABSTRACT. Transformation graphs plays important role in the field of chemical graph theory. In this paper, we consider the k^{th} generalized transformation graphs G_k^{ab} and their complements and obtain expressions for F -index, hyper-Zagreb index and their coincides.

1. Introduction

Chemical compounds are often modeled as graphs (molecular graphs). Vertices on the molecular graph represent an atom and the edges between the vertices represent a covalent bond between the corresponding atoms. This kind of representation of chemical compounds is useful for the study of QSPR/QSAR by using molecular descriptors like topological indices. A topological index is a graph invariant which maps each molecular graph to a real number.

Let G be a graph with vertex set $V(G)$ and edge set $E(G)$. The degree of a vertex u in $V(G)$ denoted by $\text{deg}_G(u)$, is the number of edges which are incident with u . The complement \bar{G} of a graph G also has $V(G)$ as its vertex set, but two vertices are adjacent in \bar{G} if and only if they are not adjacent in G .

The first and second Zagreb indices introduced by Gutman and Trinajstić are two of the most important topological graph indices. They are denoted by $M_1(G)$ and $M_2(G)$ and were defined as [6],

$$M_1(G) = \sum_{uv \in E(G)} [\text{deg}_G(u) + \text{deg}_G(v)] = \sum_{u \in V(G)} \text{deg}_G^2(u)$$

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