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INVERSE SUM CONNECTIVITY ENERGY OF A GRAPH

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Abstract: In this paper we introduce and investigate the inverse sum connectivity energy of a graph $ISCE(G)$. We establish upper and lower bounds for $SDDE(G)$. Also the symmetric division deg energy for certain graphs with one edge deleted are calculated.

Keywords and Phrases: inverse sum connectivity index, inverse sum connectivity eigenvalues, inverse sum connectivity energy, k-complement, k(i)-complement, edge deletion.

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1. Introduction

Let G be a simple graph and let $\{v_1, v_2, \cdots, v_n\}$ be the set of its vertices. Let $i, j \in \{1, 2, \cdots, n\}$. If two vertices v_i and v_j of G are adjacent, then we use the notation $v_i \sim v_j$. For a vertex $v_i \in V(G)$, the degree of v_i will be denoted by $d(v_i)$ or briefly by d_i.

In chemistry, topological indices play an important role due to their numerous applications. There are many topological indices such as Randić index, sum-connectivity index, atom bond connectivity index, Zagreb indices, etc. Inverse sum connectivity is a new molecular descriptor, introduced by K.N Prakasha [4]. He defined the new index of a graph G as follows

$$ISCM(G) = ISC(G) = \sum_{i \sim j} \left(\sqrt{d_i + d_j} \right).$$