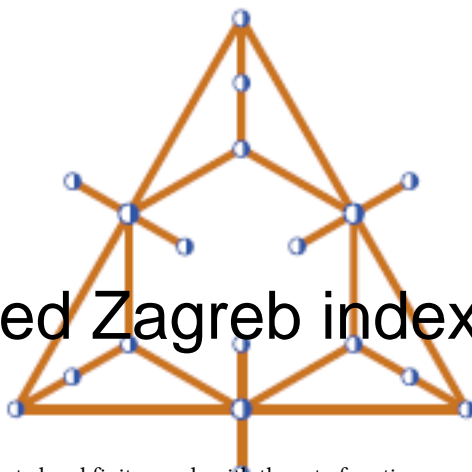


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Generalized Zagreb index of graphs



Content :

Let G be a simple, undirected, connected and finite graph with the set of vertices $V(G)$ and the set of edges $E(G)$. The degree of a vertex u of G is the number of edges incident to u and it is denoted by $\deg(u)$. A topological index $\text{Top}(G)$ of G is a real number with this property that for every graph H isomorphic to G , $\text{Top}(H)=\text{Top}(G)$. Wiener index is the first topological index in Chemistry which was introduced by the Chemist, Harold Wiener, within the study of relations between the structure of organic compounds and their properties [1]. The Wiener index of G is denoted by $W(G)$ and it is defined as the sum of distances between all pairs of vertices of G . The two other topological indices of G are Zagreb indices which were defined by Gutman and Trinajstić [2].

The first Zagreb index of G is denoted by $M_1(G)$ and it is equal to the summation of $\deg(u)^2$ over all vertices u of G and the second Zagreb index of G is denoted by $M_2(G)$ and it is equal to the summation of $\deg(u)*\deg(v)$ over all edges uv of G . In this paper, we introduce the generalized Zagreb index of graphs and express some of the properties of this index. Then we find this index for some nano-structures.

Key words. The first and second Zagreb indices, Generalized Zagreb index, nanotubes and nanotori.

References

[1] H. Wiener, Structural determination of paraffin boiling points, J. Am. Chem. Soc., 69 (1947), 17-20.

[2] I. Gutman and N. Trinajstić, Graph theory and molecular orbitals, Total electron energy of alternant hydrocarbons, Chem. Phys. Lett., 17 (1972), 535-538.

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