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COMPUTATION AND ALGORITHMIC SOLUTION OF TOPOLOGICAL INDICES OF CERTAIN GRAPHS

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A solitary number that can be utilized to describe some property of the graph of a particle is known as a topological index for that graph. There are various topological indices that have discovered a few applications in hypothetical science. In this thesis, different topological index are computed, algorithms are devised for complicated computations and also where mathematical computation was not possible. In the first thesis, construction algorithm for zero divisor graph with finite rings is developed. Computer based experiments are conducted to find the properties or characteristics of these graphs. On the basis of those properties further algorithms are developed to compute eccentric topological indices for zero divisor graph. The results of algorithm are compared with mathematical computations. Also, degree based topological indices are computed for line graph and subdivision of line graph of benzene ring in P-type-surface network and conductive two dimensional metallic organic frameworks $Cu_3(HITP)_2[m,n]$. Also, algorithms are developed for distance calculator and distance based topological indices calculations for complete binary tree and complete ternary tree.

course stability of the towed ship indicated by large sway motion. In addition, the seakeeping performance has been improved indicated by the reduction of heave and pitch motion within the range $1.25<\lambda<2.0$ and $0<\theta°<90$, respectively. The magnitude of towline tension is increased as the towline length and towing's speed increased to 3.0 and 0.873 m/s, respectively. The result of the simulation is well agreed with experimental result in case of towing point location of 0.5 and towline length of 1.0 in calm water conditions. Thus, these findings are beneficial and contribute to ship towing system safety navigation.