

ON THE M -POLYNOMIAL AND SOME TOPOLOGICAL INDICES
OF THE PARA-LINE GRAPHS OF THE
NANOSTRUCTURE $TUC_4C_8(R)$

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Abstract: The study of topological indices associated with molecular graphs is very helpful in understanding many of their physico-chemical properties. Various degree based topological indices such as generalized Randić index, Zagreb index, Arithmetic-Geometric index and harmonic index are found to be particularly useful in the study of many molecular nanostructures. In this paper, we obtain the M -polynomial of the para-line graphs of the $2D$ -lattice, nanotube and nanotorus of $TUC_4C_8(R)$ $[p, q]$, by means of which, we compute some of their topological indices.

Keywords and Phrases: Topological indices, subdivision, para-line graph, M -polynomial, $2D$ -lattice, nanotube, nanotorus.

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1. Introduction

The graphs discussed in this article are simple, undirected, finite and connected. The degree $deg_G(v)$ of a vertex $v \in V$ in a graph $G = (V, E)$ is the number of vertices adjacent with v in G and is closely related to the valence of an atom in