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TOPOLOGICAL INDICES OF LINE GRAPH AND LINE GRAPH OF SUBDIVISION OF POLYPHENYLENE DENDRIMERS

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Topological indices are applications that commonly used in Graph Theory. There are several kinds of topological indices, including degree-based topological indices, distance-based topological indices and degree-distance based topological indices. These topological indices correspond with some physicochemical properties such as boiling point and stability of the chemical compound. In Graph Theory, the concepts of line graph and subdivision graphs were most prevalent. Thus, these concepts were applied to the two-dimensional graph of Polyphenylene dendrimers. This thesis focuses on degree-based topological which is Zagreb indices and Zagreb coindices. The line graph and a line graph of subdivision of some families of Polyphenylene dendrimers had been constructed. Then, investigate Zagreb indices and Zagreb coindices of this new graph. In addition, physicochemical properties of Zagreb indices and Zagreb coindices of the line graph and line graph of subdivision for families of Polyphenylene dendrimers are analysed. Maple software were used to make a comparison between these families of Polyphenylene dendrimer by executing the three-dimensional graphical for this analysis.

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INDEKS TOPOLOGI BAGI GRAF GARISAN DAN GRAF GARISAN BAGI SUB PEMBAHAGIAN UNTUK DENDRIMER POLIFENILENA

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Indek topologi adalah aplikasi yang biasa digunakan dalam Teori Graf. Terdapat beberapa jenis indeks topologi, termasuk indeks topologi berasaskan darjah, indeks topologi berasaskan jarak dan indeks topologi berasaskan darjah-jarak. Indeks topologi ini sepadan dengan beberapa sifat fizikokimia seperti takat didih dan kestabilan sebatian kimia. Dalam Teori Graf, konsep graf garis dan graf sub pembahagian adalah yang paling lazim. Oleh itu, konsep-konsep tersebut diaplikasikan pada graf dua-dimensi bagi dendrimer Polifenilena. Tesis ini, fokus kepada indeks topologi berdasarkan darjah iaitu indeks Zagreb dan ko-indeks Zagreb. Graf garis dan graf garis dalam sub pembahagian bagi beberapa keluarga dendrimer Polifenilena telah dihasilkan. Kemudian, menyiasat indeks Zagreb dan ko-indeks Zagreb untuk graf baru ini. Tambahan pula, sifat fizikokimia indeks Zagreb dan ko-indeks bersama Zagreb bagi graf garisan dan graf garisan bagi graf sub pembahagian untuk beberapa famili dendrimer polifenilena dianalisi. Perisian *Maple* digunakan untuk membuat perbandingan indeks Zagreb dan ko-indeks Zagreb antara beberapa famili dendrimer Polifenilena dengan menghasilkan grafik 3-dimensi untuk analisis ini.