South East Asian J. of Mathematics and Mathematical Sciences
Vol. 20, Proceedings (2022), pp. 01-20

ISSN (Online): 2582-0850

ISSN (Print): 0972-7752

BASAVA AND HYPER-BASAVA INDICES OF GRAPHS

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(**Received:** *Apr. 08, 2022* **Accepted:** *Aug. 25, 2022* **Published:** *Aug. 30, 2022)*

Special Issue
Proceedings of National Conference on
"Emerging Trends in Discrete Mathematics, NCETDM - 2022"

Abstract: Inspired by the recent work of the Gourava and hyper-Gourava indices, we propose a new topological indices, the Basava and hyper-Basava indices of a molecular graph. Further, we compute the Basava and hyper-Basava indices of some standard class of graphs. The Basava and hyper-Basava indices are tested with physico-chemical properties of octane isomers such as entropy, acentric factor and DHVAP using linear regression models. The first Basava index highly correlates with acentric factor (coefficient of correlation **0.9590748**) and the second Basava index highly correlates with entropy (coefficient of correlation **0.9491009**). Finally, we compute the Basava and hyper-Basava indices of certain families of nanostar dendrimers. The obtained results can be used in data mining, particularly in researching the uniqueness of hyper-branched molecular graphs.

Keywords and Phrases: Basava indices, hyper-Basava indices, octane isomers, dendrimers.

2020 Mathematics Subject Classification: 05C09, 05C92.

1. Introduction and Preliminaries

Chemical graph theory is a branch of the mathematical chemistry which has an important effect on the development of the chemical sciences. A single number that