THE PRODUCT CONNECTIVITY BANHATTI INDEX OF A GRAPH

V.R. Kulli

Department of Mathematics
Gulbarga – 585 106, India

e-mail: vrkulli@gmail.com

B. Chaluvaraju

Department of Mathematics
Bangalore University
Jnana Bharathi Campus
Bangalore – 560 056, India

e-mail: bchaluvaraju@gmail.com

AND

H.S. Boregowda

Department of Mathematics
Tumkur University
University Constituent College Campus
Tumkur – 572 103, India

e-mail: bgsamarasa@gmail.com

Abstract

Let $G = (V, E)$ be a connected graph with vertex set $V(G)$ and edge set $E(G)$. The product connectivity Banhatti index of a graph G is defined as $PB(G) = \sum_{ue} \frac{1}{\sqrt{d_G(u)d_G(e)}}$, where ue means that the vertex u and edge e are incident in G. In this paper, we determine $PB(G)$ of some standard classes of graphs. We also provide some relationship between $PB(G)$ in terms of order, size, minimum / maximum degrees and minimal non-pendant vertex degree. In addition, we obtain some bounds on $PB(G)$ in terms of Randić, Zagreb and other degree based topological indices of G.

Keywords: Randić index, Zagreb indices, Banhatti indices, product connectivity Banhatti index.

2010 Mathematics Subject Classification: 05C05, 05C012, 05C35.

References

[1] K.Ch. Das, S. Das and B. Zhou, *Sum-connectivity index of a graph*, Front. Math., China **11** (2016) 47–54.
doi:10.1007/s11464-015-0470-2

[2] I. Gutman and B. Furtula, Recent Results in the Theory of Randić Index (Univ. Kragujevac, Kragujevac, 2008).

[3] I. Gutman and N. Trinajstić, *Graph theory and molecular orbitals. Total φ-electron energy of alternant hydrocarbons*, Chem. Phys. Lett. **17** (1972) 535–538.
doi:10.1016/0009-2614(72)85099-1

[4] I. Gutman, V.R. Kulli, B. Chaluvaraju and H.S. Boregowda, *On Banhatti and Zagreb indices*, J. Int. Math. Virtual Inst. **7** (2017) 53–67.
doi:10.7251/JIMVI1701053G

[5] V.R. Kulli, College Graph Theory (Vishwa International Publications, Gulbarga, India, 2012).

[6] V.R. Kulli, *On K Banhatti indices of graphs*, J. Comput. Math. Sci. **7** (2016) 213–218.

[7] V.R. Kulli, *On K indices of graphs*, Internat. J. Fuzzy Math. Arch. **10** (2016) 105–109.

[8] V.R. Kulli, *The first and second K_a indices and coindices of graphs*, Internat. J. Math. Arch. **7** (2016) 71–77.

[9] V.R. Kulli, B. Chaluvaraju and H.S. Boregowda, *On sum-connectivity Banhatti index of some nanostructures*, submitted.

[10] X. Li and I. Gutman, *Mathematical aspects of Randić-type molecular structure descriptors*, Math. Chem. Monogr. **1** (Univ. Kragujevac, Kragujevac, 2006).

[11] M. Randić, *On characterization of molecular branching*, J. Amer. Chem. Soc. **97** (1975) 6609–6615.
doi:10.1021/ja00856a001

[12] T. Mansour, M.A. Rostami, E. Suresh and G.B.A. Xavier, *On the bounds of the first reformulated Zagreb index*, Turkish J. Anal. Number Theory **4** (2016) 8–15.
doi:10.12691/tjant-4-1-2

[13] S. Nikolić, G. Kovačević, A. Miličević and N. Trinajstić, *The Zagreb indices 30 years after*, Croat. Chem. Acta **76** (2003) 113–124.

[14] B. Zhou and N. Trinajstić, *On a novel connectivity index*, J. Math. Chem. **46** (2009) 1252–1270.
doi:10.1007/s10910-008-9515-z

[15] B. Zhou and N. Trinajstić, *On general sum-connectivity index*, J. Math. Chem. **47** (2010) 210–218.
doi:10.1007/s10910-009-9542-4