

## THE CONNECTED TOTAL RESTRAINED GEODETIC DOMINATION NUMBER OF A GRAPH

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ABSTRACT. A collection of vertices in different connected graphs  $G$  embraces a wholesome shift in to a new collection with the properties of the couplet geodetic and dominating. This behavior of  $G$  can be given a name to connected total restrained geodetic domination in graphs. This paper gives an introduction to a new variable named connected total restrained geodetic domination number of  $G$ . Certain general properties are studied and connected total restrained geodetic domination number of certain classes of graphs are determined. It also identifies some realization problems related to connected graphs.

### REFERENCES

- [1] P. Arul Paul Sudhahar and A. Ajitha: *The restrained geodetic domination number of a graph*, in: Proc. ICAM Held at Stella Maris College, Chennai on 30<sup>th</sup> Nov and Dec 1, (2016).
- [2] A. Ajitha: Geodetic domination concept in graphs, in: Ph. D. Thesis, Manonmaniam Sundaranar University, Tamilnadu, India, 2017, 126-133.
- [3] P. Arul Paul Sudhahar and R. Umamaheswari: *The upper connected restrained geodetic domination number of a graph*, in: Proc. National Conference on Recent Trends in Algebra and Topology Held at Rani Anna Govt. College for Women, 27<sup>th</sup> Jan, (2020).
- [4] P. Arul Paul Sudhahar and R. Umamaheswari: *The Connected Restrained Geodetic Domination Number of a Graph*, Int. J. Analytical Experimental Modal Anal., **11**(2019), No. 10, 261-269.
- [5] P. Arul Paul Sudhahar and R. Umamaheswari: *The upper total restrained geodetic domination number of a graph*, Int. J. Adv. Sci. Tech., **29**(2020), 2660-2668.
- [6] Buckley and F. Harary: *Distance in Graphs*, Addition-Wesley, Redwood City, 1990.
- [7] G. Chartrand, F. Harary and P. Zhang: *Introduction to Graph Theory*, Mac Graw Hill, 2015.
- [8] G. Chartrand, F. Harary and P. Zhang: *On the geodetic number of a graph*, Networks, **39**(2002), 1-6.
- [9] David Amos: On total domination in graphs, Senior Project, University of Houston, 2012.

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- [10] A. Hansberg and L. Volkmann: *On the geodetic and geodetic domination numbers of a graph*, Discrete Math., **310**(2015), No. 15-16, 2140-2146.
- [11] F. Harary: *Graph Theory*, Narosa Publishing House, 1997.
- [12] T.W. Haynes, S.T. Hedetniemi and P.J. Slater: *Fundamentals of Domination in Graphs*, Marcel Dekker Inc, New York, 1998.

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