ON MINIMAL GEODETIC DOMINATION IN GRAPHS

HEARTY M. NUENAY¹

AND

FERDINAND P. JAMIL²

Department of Mathematics and Statistics
MSU-Iligan Institute of Technology
Iligan City, Philippines

e-mail: ferdinand.jamil@g.msuiit.edu.ph

Abstract

Let G be a connected graph. For two vertices u and v in G , a u - v geodesic is any shortest path joining u and v . The closed geodesic interval $I_G[u, v]$ consists of all vertices of G lying on any u - v geodesic. For $S \subseteq V(G)$, S is a geodesic set in G if $\bigcup_{u,v \in S} I_G[u, v] = V(G)$.

Vertices u and v of G are neighbors if u and v are adjacent. The closed neighborhood $N_G[v]$ of vertex v consists of v and all neighbors of v . For $S \subseteq V(G)$, S is a dominating set in G if $\bigcup_{u \in S} N_G[u] = V(G)$. A geodesic dominating set in G is any geodesic set in G which is at the same time a dominating set in G . A geodesic dominating set in G is a minimal geodesic dominating set if it does not have a proper subset which is itself a geodesic dominating set in G . The maximum cardinality of a minimal geodesic dominating set in G is the upper geodesic domination number of G . This paper initiates the study of minimal geodesic dominating sets and upper geodesic domination numbers of connected graphs.

Keywords: minimal geodesic dominating set, upper geodesic domination number.

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²Corresponding author.

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