A CHARACTERIZATION OF GRAPHS
WITH DISJOINT TOTAL DOMINATING SETS

Iztok Peterin

University of Maribor, Slovenia

A set S of vertices in a graph G is a total dominating set of G if every vertex is adjacent to a vertex in S. A fundamental problem in total domination theory in graphs is to determine which graphs have two disjoint total dominating sets. We provide a constructive characterization of the graphs that have two disjoint total dominating sets.

More detailed, every graph whose vertices can be partition into two total dominating sets can be obtain from one of four basic graphs with a finite sequence of 19 (simple) operations.