Abstract

A *radio labeling* for a graph G is an injective function $c : V(G) \to \{1, 2, 3, \ldots\}$ satisfying $|c(x) - c(y)| + d(x, y) \geq d + 1$ for any $x, y \in V$. The maximum number in the range of c is called the *span* of c. The *radio number* of G, denoted by $rn(G)$, is the minimum span taken over all radio labelings of G. In this thesis, we give some characterization of graphs for a certain lower bound is optimal. Moreover, we give a sufficient condition for a graph to attain the mentioned bound. By using the later result, we determine the radio number for wedge sum (one-vertex union) of two graphs with specific settings.