Abstract

The study of balance index set and friendly index set have attracted wide attention over the past two decades. A good deal of research has been done in obtaining these index sets and studying their properties. In general it is difficult to determine the balance index set of a given graphs. Most of the existing research on this problems have focussed on some special families of graphs with simple structure. Although many results on balanced labeling and balance index set have already been published, there are still many problems that we can try to solve. Kwong and Shiu [19] developed an algebraic approach to solve the balance index set problems. It shows that the balance index set depends on the degree sequence of the graph. It becomes a very powerful tool to deal with balance indexes.

In this thesis, we have obtained balance index set, friendly index set and full friendly index set of certain classes of graphs, and their relationship established. The balance index number and the friendly index number of graphs are defined, and applied these to class of graphs. At the end, mean $k_{\Delta}$— edge equitable vertex labeling of subdivision graph for arithmetic mean and geometric mean are defined, and obtained these labeling patterns for path graph, star graph, cycle, complete graph, wheel graph and complements of certain classes of graphs.