

# Abstract

In Chapter 1, some necessary definitions and results from graph theory are given along with a description on the progress towards the relationship of graph theory with other sciences like chemistry. Involvement of graph theory in Chemistry has emerged as a separate science known as chemical graph theory.

In Chapter 2, we study the ordering of connected graphs having small degree distances. Families of graphs that are mainly considered there are trees, unicyclic graphs, bicyclic graphs and general simple connected graphs. While giving an ordering to these graphs having small degree distances results were proved dealing with the diameter in ascending order.

In Chapter 3, using the ideas presented in last chapter trees and unicyclic connected graphs were separately ordered with respect to the degree distance index (in increasing order). Same technique (as in Chapter 2) was used in proving the main results of this chapter *i.e.* dealing with the diameter of trees (resp. unicyclic graphs). A list of four trees and four extremal unicyclic graphs is given there.

In Chapter 4, lower and upper bounds on degree distance index are determined in terms of various graphical parameters like Zagreb index, order, size, diameter, radius, minimum degree, and graphs for which these bounds are attained are characterized. Chapter 5 deals with an ordering of trees having small general sum-connectivity index. In last Chapter some comments are given, in the same chapter some open problems are also proposed.