Annexure – I

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Title of the Thesis: **New Results in Various Aspects of Graph Theory**

Abstract

Graph theory and its applications have grown exponentially in the twentieth century. The development of computer science and optimization techniques have accelerated the research activities in the subject. At present, this branch has the status of one of the fastest growing field of research with multifaceted applications ranging from electrical engineering to management science and computer science to social science.

Graph theory has a close correlation with other branches of mathematics such as matrix theory, statistics, algebra, geometry and topology. Algebraic graph theory, domination in graphs, algorithmic graph theory, energy of graphs and labeling of graphs are potential fields of research in graph theory.

The labeling of discrete structures is one of the emerging areas of research due to its diversified applications. Most of the graph labeling problems trace their origin with graceful labeling which was introduced by Rosa in 1967.

This research work deals with various types of graph labeling namely cordial labeling, product cordial labeling, total product cordial labeling, edge product cordial labeling, total edge product cordial labeling, divisor cordial labeling and square divisor cordial labeling. In this research work a new graph labeling namely cube divisor cordial labeling is introduced.

List of Publication(s):

1) Divisor cordial labeling in the context of graph operations on bistar
2) Various graph labeling techniques for the line graph of bistar