

CHAPTER I
INTRODUCTION

Let G be a simple graph with q edges. In this thesis, we let $V(G)$ and $E(G)$ denote the vertex set and the edge set of G , respectively. In 1967, Rosa [2] gave a definition of a graceful labeling of G which is an injection f from $V(G)$ to the set $\{0, 1, 2, \dots, q\}$ such that when each edge xy is assigned the label $|f(x) - f(y)|$, the resulting edge labels are distinct. In 1991, Gnanajothi [1] introduced an odd-graceful concept for a graph, that is an injection f from $V(G)$ to the set $\{0, 1, 2, \dots, 2q - 1\}$ such that, when each edge xy is assigned the label $|f(x) - f(y)|$, the resulting edges labels are in the set $\{1, 3, 5, \dots, 2q - 1\}$. In 2009, Solairaju and Chithra [5] reversed the concepts of those two previous vertex labelings by defining an edge-odd graceful labeling and showed edge-odd graceful labelings of graphs related to paths. Later, Singhun [4] showed edge-odd graceful labelings of graphs related to cycles, $SF(n, m)$ where n is an odd integer and m is an even integer such that $n \geq 3$ and $n|m$ and a wheel graph W_n where n is even.

In chapter 2, we give definitions that we will use throughout this thesis. In there, we also give literature reviews on those two latter articles. Motivated by these two latter articles, we construct graphs obtained from cycles and paths. In chapter 3, the prism of cycle C_n , where $n \geq 3$ is shown to be an edge-odd graceful graph. A shaft graph which defined by joining the middle point of two wheel graphs together is studied in chapter 4 and we show that under some conditions on the number of vertices, the shaft graph is an edge-odd graceful graph. In chapter 5, we define a prism-like graph, called the cross prism of cycle C_n , and show that this graph is an edge odd graceful graph when $n \geq 3$. Finally, in chapter 6, we define the prism of star by joining the corresponding vertices of two star graphs. We show that the prism of star is an edge-odd graceful graph when $n \geq 3$.