

## LUCKY LABELING ON SHELL FAMILY OF GRAPHS

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**Abstract:** Let  $f : V(G) \rightarrow N$  be a labeling of the vertices of a graph  $G$ . Let  $S(v)$  denote the sum of labels of the neighbours of the vertex  $v$  in  $G$ . If  $v$  is an isolated vertex of  $G$ , then  $S(v) = 0$ . A labeling  $f$  is lucky if  $S(u) \neq S(v)$  for every pair of adjacent vertices  $u$  and  $v$ . The lucky number of a graph  $G$ , denoted by  $\eta(G)$ , is the least positive integer  $k$  such that  $G$  has a lucky labeling with  $\{1, 2, \dots, k\}$  as the set of labels. In this paper we prove that shell graph, bow graph and wheel graph admits Lucky labeling.

**Keywords and Phrases:** Lucky Labeling, Shell Graph, Bow Graph, Wheel Graph, Lucky number.

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### 1. Introduction

The first paper in Graph Theory was written by Euler in 1736, when he solved the Konigsberg Bridge problem. Graph theory is a dynamic mathematical discipline that has many applications in wide variety of subjects such as Physics, Chemistry, Operations Research and so on. Graph labeling serves as a frontier between Number Theory and structure of graphs. Labeling the vertices or edges or both, subject to certain conditions is called as Graph Labeling. Most Graph labeling methods trace their origin to one introduced by Rosa [6] in 1967. It was further developed by Graham and Sloane [5] in 1980. Labeled graph serves as useful models for many applications such as x-ray, cryptography, radar, astronomy,