

# Edge-magic total labelings of wheels, fans and friendship graphs

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## Abstract

An *edge-magic total labeling* on a graph with  $v$  vertices and  $e$  edges will be defined as a one-to-one map taking the vertices and edges onto the integers  $1, 2, \dots, v+e$  with the property that the sum of the label on an edge and the labels of its endpoints is constant independent of the choice of edge. In this paper we give edge-magic total labelings of wheels, fans and friendship graphs.

## 1 Introduction

In this paper all graphs are finite, simple and undirected. The graph  $G$  has vertex set  $V = V(G)$  and edge set  $E = E(G)$  and we let  $e = |E(G)|$  and  $v = |V(G)|$ . A general reference for graph theoretic notions is [15].