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VERTEX-MAGIC TOTAL LABELINGS OF DISCONNECTED GRAPHS

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ABSTRACT. Let G be a graph with vertex set $V = V(G)$ and edge set $E = E(G)$ and let $e = |E(G)|$ and $v = |V(G)|$. A one-to-one map λ from $V \cup E$ onto the integers $\{1, 2, ..., v + e\}$ is called *vertex magic total labeling* if there is a constant k so that for every vertex x,

$$\lambda(x) \; + \; \sum \lambda(xy) \; = \; k$$

where the sum is over all vertices y adjacent to x. Let us call the sum of labels at vertex x the *weight* $w_\lambda(x)$ of the vertex under labeling λ; we require $w_\lambda(x) = k$ for all x. The constant k is called the *magic constant* for λ.

In this paper, we present the vertex magic total labelings of disconnected graph, in particular, two copies of isomorphic generalized Petersen graphs $2P(n, m)$, disjoint union of two non-isomorphic suns $S_m \cup S_n$ and t copies of isomorphic suns tS_n.

Key words : Vertex magic total labeling, disconnected graph, generalized Petersen graph, sun.
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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 [10].

MacDougall *et al.* [6] introduced the notion of a *vertex-magic total labeling*. This is an assignment of the integers from 1 to $v+e$ to the vertices and edges of G so that at each vertex the vertex label and the labels on the edges incident at that vertex add to a fixed constant. More formally, a one-to-one map λ

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