Abstract

Let $\mathbb{N}_0$ denote the set of all non-negative integers and $P(\mathbb{N}_0)$ be its power set. An integer additive set-labeling (IASL) of a graph $G$ is an injective function $f : V(G) \to P(\mathbb{N}_0)$ such that the induced function $f^+ : E(G) \to P(\mathbb{N}_0)$ is defined by $f^+(uv)$.
\[ f(u) + f(v) = f(u) + f(v) \]

where \( f(u) + f(v) \) is the sumset of
\[ f(u) \]
and
\[ f(v) \]
An IASL \( f \) is said to be an integer additive set-indexer (IASI) if the associated edge-function \( f \)
is also injective. An IASL \( f \) of a given graph \( G \) is said to be a weak integer additive set-labeling
(WIASL) of \( G \) if the cardinality of the set-label of every edge of \( G \) is equal to the cardinality of
the set-label of at least one end vertex of it. In this paper, we study the admissibility of weak
integer additive set-labeling by different graphs.

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**Index Terms**

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**Keywords**

Integer additive set-labeled graphs, weak integer additive set-labeled graphs, sparing number of graphs