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The sparing number of certain graph powers

N. K. Sudev
Department of Mathematics,
CHRIST (Deemed to be University),
Bangalore-560029, INDIA.
email: sudev.nk@christuniversity.in

K. P. Chithra
Department of Mathematics,
CHRIST (Deemed to be University),
Bangalore-560029, INDIA.
email:
chithra.kp@res.christuniversity.in

K. A. Germina
Department of Mathematics,
Central University of Kerala,
Kasaragod, INDIA.
email: srgerminaka@gmail.com

Abstract. Let $\mathbb{N}_0$ be the set of all non-negative integers and $\mathcal{P}(\mathbb{N}_0)$ be its power set. Then, an integer additive set-indexer (IASI) of a given graph G is an injective function $f : V(G) \to \mathcal{P}(\mathbb{N}_0)$ such that the induced function $f^+ : E(G) \to \mathcal{P}(\mathbb{N}_0)$ defined by $f^+(uv) = f(u) + f(v)$ is also injective. An IASI f is said to be a weak IASI if $|f^+(uv)| = \max(|f(u)|, |f(v)|)$ for all $u, v \in V(G)$. A graph which admits a weak IASI may be called a weak IASI graph. The set-indexing number of an element of a graph G, a vertex or an edge, is the cardinality of its set-labels. The sparing number of a graph G is the minimum number of edges with singleton set-labels, required for a graph G to admit a weak IASI. In this paper, we study the admissibility of weak IASI by certain graph powers and their corresponding sparing numbers.

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