South East Asian J. of Mathematics and Mathematical Sciences
Vol. 17, Proceedings (2021), pp. 33-38

ISSN (Online): 2582-0850

ISSN (Print): 0972-7752

EDGE-COLORING VERTEX-WEIGHTING OF SOME PRODUCT GRAPHS

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(**Received:** *Aug. 08, 2021* **Accepted:** *Oct. 01, 2021* **Published:** *Nov. 30, 2021)*

Special Issue
Proceedings of International Virtual Conference on
"Mathematical Modelling, Analysis and Computing IC- MMAC- 2021"

Abstract: Let G be a graph. A $k-$vertex weighting of a graph G is a mapping $w : V(G) \to \{1, 2, 3, \ldots, k\}$. A $k-$vertex weighting induces an edge labeling $f_w : E(G) \to \mathbb{N}$ such that $f_w(uv) = w(u) + w(v)$. Such a labeling is called an edge-coloring $k-$weighting if $f_w(e) \neq f_w(e')$ for any two adjacent edges e and e'. Denote by $\mu'(G)$ the minimum k for G to admit an edge-coloring $k-$vertex weighting. In this paper, we determine $\mu'(G)$ for some product graphs.

Keywords and Phrases: Edge coloring, Vertex weighting, Cartesian product.

2020 Mathematics Subject Classification: 05C15, 05C76.

1. Introduction and Preliminaries

Let G be a graph. For general notations and definitions we follow [1].

In [6], edge-coloring vertex-weighting introduced by WC Shiu et al.

A mapping $w : V(G) \to \{1, 2, 3, \ldots, k\}$ induces a edge labeling $f_w : E(G) \to \mathbb{N}$ such that $f_w(uv) = w(u)+w(v)$ is the sum of the weighting of the adjacent vertices. Such a labeling is called an *edge-coloring k-vertex-weighting* if $f_w(e) \neq f_w(e')$ for any two adjacent edges e and e'. Denote by $\mu'(G)$ the minimum k for G to admit an edge-coloring $k-$vertex weighting.