VERTEX-EDGE NEIGHBORHOOD PRIME LABELING OF SOME TREES

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Abstract: Let G be a graph with vertex set $V(G)$ and edge set $E(G)$. For $u \in V(G)$, $N_V(u) = \{w \in V(G)/uw \in E(G)\}$ and $N_E(u) = \{e \in E(G)/e = uv$, for some $v \in V(G)\}$. A bijective function $f : V(G) \cup E(G) \to \{1, 2, 3, \ldots, |V(G) \cup E(G)|\}$ is said to be a vertex-edge neighborhood prime labeling, if for $u \in V(G)$ with $deg(u) = 1$, gcd $\{f(w), f(uw)/w \in N_V(u)\} = 1$; for $u \in V(G)$ with $deg(u) > 1$, $gcd\{f(w)/w \in N_V(u)\} = 1$ and $gcd\{f(e)/e \in N_E(u)\} = 1$. A graph which admits vertex-edge neighborhood prime labeling is called a vertex-edge neighborhood prime graph. In this paper we investigate vertex-edge neighborhood prime labeling for some trees namely coconut tree, double coconut tree, spider graph, olive tree, comb graph and $F(n, 2)$-firecrackers.

Keywords and Phrases: Neighborhood-prime labeling, total neighborhood prime labeling, vertex-edge neighborhood prime labeling.

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1. Introduction and Definitions

In this paper we consider simple, finite, connected, undirected graph G with $V(G)$ as vertex set and $E(G)$ as edge set. For various notations and terminology of graph theory, we follow Gross and Yellen [3] and for some results of number theory, we follow Burton [1].