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EDGE ITALIAN DOMINATION OF SOME GRAPH PRODUCTS

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Abstract: An edge Italian dominating function (EIDF) of a graph $G = (V, E)$ is a function $f : E(G) \to \{0, 1, 2\}$ such that every edge x with $f(x) = 0$ is adjacent to some edge y with $f(y) = 2$ or adjacent to at least two edges z_1, z_2 with$f(z_1) = f(z_2) = 1$. The weight of an edge Italian dominating function is the sum $\sum_{x \in E(G)} f(x)$ and the minimum weight of an edge Italian dominating function of G is called the edge Italian domination number of G and is denoted by $\gamma_I'(G)$. In this paper, we determine the edge Italian domination number of some graph products.

Keywords and Phrases: Edge Italian Domination, Edge Italian dominating function, Edge Italian Domination number.

2020 Mathematics Subject Classification: 05C.

1. Introduction

Let $G = (V, E)$ be a simple connected graph with vertex set $V = V(G)$ and edge set $E = E(G)$. A graph G with p vertices and q edges will be referred to as a (p, q)-graph. A subset S of V is called a dominating set of G if every vertex not in S is adjacent to some vertex in S. The domination number, $\gamma(G)$, of G is the minimum cardinality taken over all dominating sets of G. The concept of edge domination in graphs was introduced by Mitchell and Hedetniemi [6]. A subset F of edges of a graph G is called an edge dominating set of G if every edge not in