

## VERTEX - EDGE DOMINATING COLORING OF GRAPHS

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**Abstract:** A vertex  $u$  in a graph  $G = (V, E)$  is said to  $ve$ -dominate an edge  $e = vw$  if  $u \in \{v, w\}$  or  $uv \in E(G)$  or  $uw \in E(G)$ . An edge coloring is said to be a  $ve$ -dominating coloring if no two edges  $ve$ -dominated by a single vertex receive the same color. The minimum number of colors required for a  $ve$ -dominating coloring of a graph  $G$  is called  $ve$ -chromatic number of  $G$  and is denoted by  $\chi_{ve}(G)$ . In this paper we initiate the study of this parameter.

**Keywords and Phrases:**  $ve$ -Domination,  $ve$ -chromatic number.

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### 1. Introduction

Let  $G = (V, E)$  be a graph. Let  $p$  and  $q$  denote the number of vertices and the number of edges respectively. Let  $d(v)$  denote the degree of vertex  $v$ . The minimum and maximum degree of a graph are denoted by  $\delta(G)$  and  $\Delta(G)$  respectively. The neighbourhood of a vertex  $v \in V(G)$  is the set of all vertices adjacent to  $v$  in  $G$  and is denoted by  $N(v)$ .

Let  $d(u, v)$  denote the length of a shortest path between two vertices  $u$  and  $v$  in  $G$ . The length of the longest path is called the *diameter* and is denoted by  $diam(G)$ . Let  $S_1, S_2 \subseteq V(G)$ . The distance between  $S_1$  and  $S_2$  is given by  $d(S_1, S_2) =$