

Abstract

Let Γ be simple graph which is also known as strict graph. A domination edge coloring (DE-coloring) of Γ is a proper edge coloring in which each edge of Γ is adjacent to every edge of some color class (possibly its own class). The dominator edge chromatic number (DEC-number) of Γ is the least number of color classes from all dominator edge colorings of Γ , denoted by $X'_d(\Gamma)$. A domination coloring is a proper vertex coloring of Γ in which every vertex of Γ is adjoining all the vertices of at least one color class. Domination chromatic number of Γ is the least number of color classes that can be formed among all the domination coloring of Γ . In this paper, we establish the bounds of the DEC-number of a graph, present the DEC-number of special graphs and study the relationship of the DEC-number between Γ and the operation of Γ .

Keywords: Dominator edge coloring ; dominator edge chromatic number; edge domination set ; operation of a graph; domination coloring ; domination chromatic number of graph .