

Abstract: Given a graph $G = (V, E)$, if $e = uv \in E$, then the *closed edge-neighborhood* of e is denoted by $N[e] = \{u'v' \in E | u' = u \text{ or } v' = v\}$. A function $f : E \rightarrow \{-1, 0, 1\}$ is called the *minus signed edge domination function* (MSEDF) of G if $\sum_{e' \in N[e]} f(e') \geq 1$ for every $e \in E$. The *minus signed edge domination number* $\gamma_{se}^-(G) = \min\{f(E) | f \text{ is an MSEDF of } G\}$. In this paper, we give the lower bound on the minus signed edge-domination number of graphs. In addition, we characterize all graphs G with $\gamma_{se}^-(G) = |E(G)|$.