Degree Restricted Domination in Complement Graphs

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A set D of vertices in a graph $G = (V, E)$ is a *degree restricted dominating set* for G if each vertex v_i in D is dominating atmost $g(d_i)$ vertices of $V - D$, where g is a function restricting the degree value d_i with respect to the given function value $f(v_i)$ for a natural valued function f from the vertex set of the graph. By varying the way the restricted function $g(v_i)$ is defined we are defining three different varieties of Degree Restricted Domination. If $g(d_i) = \lceil \frac{d_i}{k_i} \rceil$, the corresponding domination is called the *upper quotient degree restricted domination*, in short $UDRD$, and the dominating set obtained in this manner is the $UDRD$-set. If $g(d_i) = \lfloor \frac{d_i}{k_i} \rfloor$ or $g(d_i) = d_i - k_i + 1$, then the corresponding domination is called the *lower quotient degree restricted domination*, in short $LDRD$ or *degree deficit restricted domination*, $DDRD$ respectively. The dominating set obtained in this manner is the $LDRD$-set and the $DDRD$-set respectively. In this paper, we are studying this type of domination for complements of some classes of graphs. Degree restricted domination has a vital role in retaining the efficiency of nodes in a network without losing the efficiency of any connection and has many interesting applications.

Keywords: Graph, Domination, Degree Restricted Domination, Upper Quotient Degree Restricted Domination, Lower Quotient Degree Restricted Domination, Degree Deficit Restricted Domination

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