Abstract

Let $\Gamma'' = [V(\Gamma''), E(\Gamma'')]$ be a graph with set of vertices and edges $V(\Gamma'')$ and $E(\Gamma'')$ respectively such that, $|V(\Gamma'')|$ is order and $|E(\Gamma'')|$ is size of the graph Γ''. Let G'' be a group and $A \subseteq G''$ be a subset of the group G''. The commuting graph $\Gamma'' = [G'', A]$ of the group G'' is a graph with vertex-set $V(\Gamma'') = A$ such that two distinct vertices $x, y \in V(\Gamma'')$ are connected by an edge i.e $xy \in E(\Gamma'')$ iff xy = yx in G''. In this thesis, we study the certain properties of the commuting graph on Dicyclic group

$$D_n^{**} =< a, x : a^{2n} = 1, x^2 = a^n, a^x = a^{-1} >$$

of order 4n and construct different families of graphs. In addition, we also obtain the certain parameters of graph theory such as chromatic number,clique number and perfect matching.