# ABSTRACT

## ON THE RELATION BETWEEN THE NON-COMMUTING GRAPH AND PRIME GRAPH OF NON-ABELIAN FINITE GROUP

**By**

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Given a non-abelian finite group $G$. Let $Z(G)$ be the center of group $G$. Non-commuting graph of group $G$ is graph with vertex set $G\backslash Z(G)$ where distinct non-central element $x$ and $y$ from group $G$ are joined by an edge if only if $xy \neq yx$. Let $\pi(G)$ denote the set of prime divisors of the order group $G$. Prime graph of group $G$ is vertex set $\pi(G)$ where distinct prime $p$ and $q$ are joined by edge if only if group $G$ contains an element order $pq$. Let $G$ and $H$ be non- abelian finite group with isomorphic non-commuting graph and $|Z(G)| = |Z(H)|$ then group $G$ and $H$ have the set of orders of maximal abelian subgroup $M(G) = M(H)$ and the same prime graph $GK(G) = GK(H)$.

**Keywords** : Non - abelian finite group, Non-Commuting graph, Prime Graph, Center, maximal abelian subgroup.