Notations:

List of notations used in the thesis are given below:

\[ \left\lfloor \frac{n}{2} \right\rfloor \quad \text{Floor of number} \]
\[ \left\lceil \frac{n}{2} \right\rceil \quad \text{Ceiling of number} \]
\[ \equiv \quad \text{Isomorphism relation} \]
\[ C_n \quad \text{Cycle on } n \text{ vertices} \]
\[ P_n \quad \text{Path on } n \text{ vertices} \]
\[ N(u) \quad \text{Open neighborhood of } u \]
\[ N[u] \quad \text{Closed neighborhood of } u \]
\[ Z_n \quad \text{Integers modulo } n \]
\[ C \quad \text{Connection set} \]
\[ \Delta(G) \quad \text{Maximum degree of vertex in } G \]
\[ \delta(G) \quad \text{Minimum degree of vertex in } G \]
\[ \Sigma \quad \text{Summation} \]
\[ V(G) \quad \text{Vertex set of a Graph } G \]
\[ E(G) \quad \text{Edge set of a Graph } G \]
\[ SDF \quad \text{Signed dominating function} \]
\[ a \equiv b \pmod{n} \quad \text{Congruence relation} \]
\[ |S| \quad \text{Cardinality of a set } S \]
\[ \gamma(G) \quad \text{Domination number } G \]
\[ \gamma_s(G) \] Signed domination number
\[ d(G) \] Domatic number
\[ d_s(G) \] Signed domatic number
\[ \text{diam}(G) \] Diameter of \( G \)
\[ \text{deg}(v) \text{ or } d(G) \] Degree of a vertex \( v \)
\[ K_n \] Complete graph of order \( n \)
\[ e_m(G) \] Embedding index of \( G \)
\[ G^+ \] Adding of an edge to every vertex of a given graph \( G \)
\[ \langle S \rangle \] Sub graph induced by a set \( S \)
\[ V_1 \text{ or } M \] Set of vertices assigned by -ve sign
\[ V_2 \text{ or } P \] Set of vertices assigned by +ve sign