CHAPTER 4

CONCLUSION

For finite simple graphs, we obtain the following results:

4.1 Let G be a super vertex-magic graph of n vertices and e edges. Then the magic number $h = e + \frac{n+1}{2} + \frac{e(e+1)}{n}$.

4.2 Every super vertex-magic graph has no isolated edge.

4.3 Every super vertex-magic graph has no isolated point.

4.4 Let G be a super vertex-magic graph of n vertices and e edges. Then $e \geq \frac{n+1}{2}$.

4.5 Let G be a super vertex-magic graph of n vertices and e edges.

1. If G is a regular graph of even degrees, then n is odd.
2. If G is a regular graph of odd degrees, then n is even.

4.6 Let G be a super vertex magic graph of n vertices and e edges. If $n < -(\frac{2e-1}{2}) + \sqrt{3e^2 + e + \frac{1}{4}}$ then the minimum degree of G is at least two.

4.7 Let G be a super vertex magic graph with n vertices, e edges and magic number h. Then the degree d of any vertex of G satisfies

$$e + \frac{1}{2} - \sqrt{(e+1)^2 - 2(h-e-n)} \leq d \leq \frac{-1}{2} + \sqrt{2(h-e) - \frac{7}{4}}$$

4.8 A path P_n is a super vertex-magic graph iff n is odd.

4.9 A cycle C_n is a super vertex-magic graph iff n is odd.

4.10 For $n \geq 5$. The circulant graph $C_n(1, m)$ is a super vertex-magic graph with the magic number $h = \frac{13n+5}{2}$ iff n is odd.

4.11 For $n \geq 5$ and n is odd. The graph $kC_n(1, m)$ is a super vertex-magic graph iff k is odd.

4.12 For $n \geq 7$. The circulant graph $C_n(1, 2, s)$ is a super vertex-magic graph with the magic number $h = \frac{25n+7}{2}$ iff n is odd.

4.13 For $n \geq 7$ and n is odd. The circulant graph $kC_n(1, 2, s)$ is a super vertex-magic graph iff k is odd.

4.14 The graph $k(P_2 \Box P_2 \Box P_2)$ is a super vertex-magic graph for all positive integer k.

4.15 Let G be an (r, s)- semiregular bipartite graph of $n \geq 4$ vertices and e edges , where $r \neq s$ and $e + 1 \geq n$. Then G is not a super vertex-magic graph.

4.16 The complete bipartite graph $K_{1,n}$ where $n \geq 3$ is not a super vertex-magic graph.

4.17 Every complete bipartite graph of $n \geq 4$ vertices is not a super vertex-magic graph.

4.18 Every $m \times m$ square lattice graph where $m \neq 4$ is not a super vertex-magic graph.

4.19 Every ladder graph $L_k = P_2 \square P_k$ is not a super vertex-magic graph for any positive integer k.

4.20 The graph $P_m \square P_{m+1}$ is not a super vertex-magic graph for any positive integer m.

4.21 Every 1- ladder square lattice of k- step is not a super vertex-magic graph.

4.22 The $k-$ level of Q_3 is not a super vertex-magic graph for all positive integer $k \neq 2, 6$.

Open problems.

It is interesting investigate whether the circulant graphs $C_n(1, 2, 3, s)$, $C_n(1, 2, 3, 4, s)$ or not.