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Mod(k) Vertex Magic Labeling in Generalized 2-complement of some Graphs- Paper II

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ABSTRACT

A (p,q) graph G with the p vertices and q edges is Mod(k) vertex magic for any integer $k\geq 2, l\epsilon Z_k$ and there exists a injective map f from V(G) to $\{\left[\frac{k}{2}\right], \left[\frac{k}{2}\right]+l, \left[\frac{k}{2}\right]+l+1, \ldots \left[\frac{k}{2}\right]+k(p-1)\}$ such that for any edge e, and the sum of the labels of vertices adjacent with the e are all equal to the same constant modulo k. In this paper, we prove that Generalized 2-complement some graphs namely $S(K_{1,n})$, Spl (C_n) are Mod(k) vertex magic graphs.

Keywords: Graph labeling, Mod(k) vertex magic labeling, star, Subdivision , Splitting graph.

AMS Subject Classification: 05C78

1.INTRODUCTION

In this paper, we manage just, connected and non-trivial graph G=(V(G),E(G)) among vertex set V(G) and edge set E(G).

Let G=(V,E) to be a graph and P=(W1,W2,W3...Wk) be partition of V of order k>1. The k-complement GkP of G (concerning P) is characterized as takes after: For all Wi and Wj in P, i≠j expel the edges amongst Wi and Wj in G and join the edges amongst Wi and Wj which are not in G. The graph accordingly acquired is known as the k- complement of G regarding P [2].

A labeling of a graph G is a mapping that takes an set of graph components for the most part vertices and edges into an set of numbers, generally integers. Numerous sorts of labeling have been examined and a splendid overview of graph labeling is built up [4].

The idea of graph labeling has fulfilled a considerable measure of ubiquity in the area of graph theory. This graph labeling are extremely valuable in Mathematical models for an extensive variety of uses being X-ray, Crystallography , Coding theory, Cryptography, Communication networks design, Radar , Space science, Circuit design and, Database Administration.

In 1970, Kotzig and Rosa defined a magic labeling of a graph G(V,E) as abijection, $f:V\cup E\rightarrow \{1,2,3...\ p+q\}$such that for all edges uw, f(u)+f(w)+f(uw) are the equal [1].
Lee, Su, Wang in 2010 defined (p,q) graph G is called Mod(k) edge magic (in short Mod(k)-EM) if here was an edge labeling $l:E(G)\rightarrow\{1,2,3...q\}$such that for any vertex u, sum of the

labels of their edges incident with the u are all equal to the same constant modulo k.(i.e) $l^+(u)=c$ for some fixed c in Z_k [8].

In 2015, Lau, Alikhani, Lee, Kocay characterized a (p,q) graph to be k-edge magic if for any integer k≥0, define a one-to-one map guided from E(G) to {k,k+1,...k+q-1} and characterized the vertex total for a vertex v as the total of the labels of the edges incident to v. In the event that such an edge labeling makes a vertex labeling in which every vertex has a constant vertex tota (mod p) [2].

In 2016, P.Sumathi and B.Fathima [5] characterized Mod(k) Vertex magic labeling. A (p,q) graph G=(V,E) is said to be a mod(k) vertex magic if for any integer $k\geq 2, l\in Z_k$ and there exists an one-to- one map $f:V(G)\rightarrow\{\left[\frac{k}{2}\right], \left[\frac{k}{2}\right]+l, \left[\frac{k}{2}\right]+l+1, \left[\frac{k}{2}\right]+k, \left[\frac{k}{2}\right]+k+l, \left[\frac{k}{2}\right]+k+l+1, \ldots \left[\frac{k}{2}\right]+k(p-1)\}$ to such an extent that the induced mapping $f^*:E(G)\rightarrow Z_k$ characterized by $f^*(uv)=(f(u)+f(v))(\text{mod } k)=l$ is a constant mapping. The function f is known as a mod(k) vertex magic labeling (in short Mod(k) VML) of G.

In this paper, we contemplate mod(k) vertex magic labeling of 2-complement of a few graphs to be specific $S(K_{1,n})$, Spl (C_n).

2. PRELIMINARIES

In this section, we give the essential definitions and notations identified with this paper.

Definition 2.1. From the graph G, a new graph were obtained by subdividing any edge G with a new vertex is called Subdivision of the G and it were denoted by S(G) [4].

Definition 2.2. For a graph G, the Splitting graph of G (Spl(G)) were attained from the G joining of any vertex u of G is the new vertex of u' is adjacent to every vertex and is adjacent to u [4].

3. MAIN RESULTS

In this section, we given the existence of Mod(k) vertex magic labeling of 2-complement of some graphs.

Theorem: 3.1. Let G be a Subdivision of a star $(S(K_{1,n}))$ with $(2n+1, n\geq 1)$ vertices say $\{u,u_1,u_2,u_3...u_n,v_1,v_2,v_3...v_n\}$. If $W_1=\{u\}$and $W_2=\{u_i, v_i : 1\leq i\leq n\}$ be the partition of G_2^P $(S(K_{1,n}))$ then 2-complement(G_2^P) of $S(K_{1,n})$ admits Mod(k) vertex magic labeling.

Proof: Let $K_{1,n}$ be a star with $\{u\}\cup\{u_i, 1\leq i\leq n\}$ be the vertices and $\{uu_i, 1\leq i\leq n\}$ be the edges.

Let $G=S(K_{1,n})$ be the Subdivision of $K_{1,n}$ is attained by subdividing any edge of $K_{1,n}$ with a new vertex $\{v_i : 1\leq i\leq n\}$ where $V(G)=\{u\}\cup\{u_i, 1\leq i\leq n\}\cup\{v_i, 1\leq i\leq n\}$ and $E(G)=\{uu_i, 1\leq i\leq n\}\cup\{u_iv_i, 1\leq i\leq n\}$. It has $2n+1$ vertices and $2n$ edges. Let

$G_1 = (V(G_1), E(G_1))$ be the 2-complement (G_2^P) of $S(K_{1,n})$ has two partitions $W_1 = \{u\}$ and $W_2 = \{u_i, v_i, 1 \le i \le n\}$ where $V(G_1) = \{u\} \cup \{u_i, v_i, 1 \le i \le n\}$ and $E(G_1) = \{uv_i, 1 \le i \le n\}$.

Case(i): When k is odd.

Define f: $V(G_1) \to \{\left[\frac{k}{2}\right], \left[\frac{k}{2}\right] + l + 1, \left[\frac{k}{2}\right] + k, \left[\frac{k}{2}\right] + k + l + 1, \ldots \left[\frac{k}{2}\right] + k(2n)\}$ by

$$f(w) = \begin{cases} \left[\frac{k}{2}\right], \text{if } w = u, \text{for } 0 \le l \le k-1, \\ \left[\frac{k}{2}\right] + \frac{k}{2}(2i), \text{if } w = u_i \text{ for } 0 \le l \le k-2, 1 \le i \le n, \\ \left[\frac{k}{2}\right] + k(i), \text{if } w = u_i \text{ for } l = k-1, 1 \le i \le n, \\ \left[\frac{k}{2}\right] + \frac{k}{2}(2i-2) + l + 1, \text{if } w = v_i \text{ for } 0 \le l \le k-2, 1 \le i \le n, \\ \left[\frac{k}{2}\right] + k(n+i), \text{if } w = v_i \text{ for } l = k-1, 1 \le i \le n. \end{cases}$$

Clearly the mapping f is an injective and we get,

$$f(u)+f(v) = \begin{cases} k(i) + l, \text{if } u = v, v = v_i \text{ for } 0 \le l \le k-2, 1 \le i \le n, \\ k(n+i)) + k - 1, \text{if } u = v, v = v_i \text{ for } l = k-1, 1 \le i \le n. \end{cases}$$

By the definition of Mod(k) vertex magic labeling, the induced mapping f* is a constant mapping.

Thus f is a Mod(k) vertex magic labeling.

2-complement (G_2^P) of $S(K_{1,n})$ is Mod(k)vertex magic graph if k is odd.

Case(ii): When k is even.

Define f: $V(G_1) \to \{\left[\frac{k}{2}\right], \left[\frac{k}{2}\right] + l, \left[\frac{k}{2}\right] + k, \left[\frac{k}{2}\right] + k + l, \ldots \left[\frac{k}{2}\right] + k(2n)\}$ by

$$f(w) = \begin{cases} \left[\frac{k}{2}\right], \text{if } w = u, \text{for } 0 \le l \le k-1, \\ \left[\frac{k}{2}\right] + k(i), \text{if } w = u_i \text{ for } l = 0, 1 \le i \le n, \\ \left[\frac{k}{2}\right] + \frac{k}{2}(2i), \text{if } w = u_i \text{ for } 1 \le l \le k-1, 1 \le i \le n, \\ \left[\frac{k}{2}\right] + k(n+i), \text{if } w = v_i \text{ for } l = 0, 1 \le i \le n \\ \left[\frac{k}{2}\right] + \frac{k}{2}(2i-2) + l, \text{if } w = v_i \text{ for } 1 \le l \le k-1, 1 \le i \le n. \end{cases}$$

Obviously the mapping f is an injective and we get,

$$f(u)+f(v) = \begin{cases} k(n+i+1), \text{if } u = v, v = v_i \text{ for } l = 0, 1 \le i \le n \\ k(i) + l, \text{if } u = v, v = v_i \text{ for } 1 \le l \le k-1, 1 \le i \le n. \end{cases}$$

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Since the definition of mod(k) vertex magic labeling, the induced mapping f* is a constant mapping.

Under the mapping f, there exists Mod(k) vertex magic labeling for (G_2^P) of $S(K_{1,n})$ Thus 2-complement (G_2^P) of $S(K_{1,n})$ is Mod(k)vertex magic graph if k is even.

Hence 2-complement(G_2^P) of $S(K_{1,n})$ admits Mod(k)vertex magic labeling.

Illustration: 1. The following figures show the $S(K_{1,3})$and 2-complement of $S(K_{1,3})$ is a Mod(5) vertex magic for l=2.

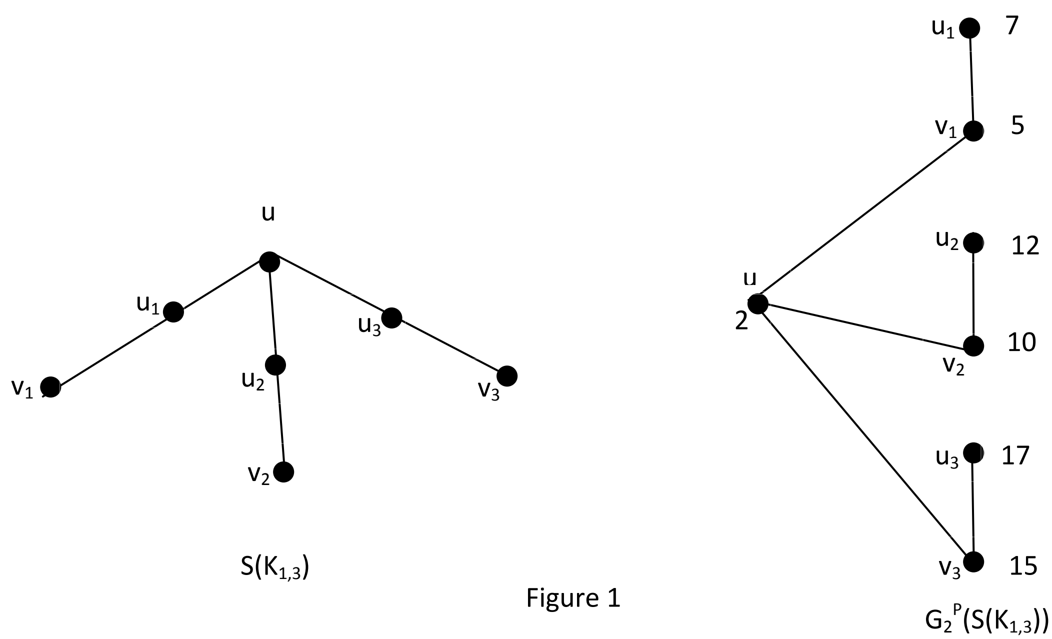

Figure 1

Theorem: 3.2

Let G be a Spl (C_n) graph with $\{u_1,u_2,u_3...u_n\}$ and $\{v_1,v_2,v_3...v_n\}$ is the vertices and n even for all n≥6. If $W_1=\{u_i,v_i$: i is odd$\}$ and $W_2=\{u_i,v_i$: i is even$\}$ be the partition of G_2^P(Spl (C_n)) then 2-complement G_2^P of Spl (C_n) admits Mod(k) vertex magic labeling.

Proof: Let (C_n) be the cycle of length n and n is even for all n≥ 6. Let $\{u_i: 1\leq i\leq n\}$ be the vertices and $\{u_iu_{i+1}: 1\leq i\leq n\}\cup\{u_nu_1\}$be the edges of C_n.

Let G=Spl (C_n)=(V(G),E(G)) is obtained by adding each vertex $\{u_i: 1\leq i\leq n\}$ of C_n a new vertex $\{v_i: 1\leq i\leq n\}$ adjacent to each vertex that is adjacent to the $\{u_i: 1\leq i\leq n\}$ where $V(G)=\{u_i: 1\leq i\leq n\}\cup\{v_i: 1\leq i\leq n\}$ and $E(G)= \{u_i u_{i+1}: 1\leq i\leq n-1\}\cup$ $\{v_i u_{i+1}: 1\leq i\leq n-1\}\cup\{v_{i+1} u_i: 1\leq i\leq n-1\}\cup\{u_nu_1, v_nu_1,v_1u_n\}$. It has 2n vertices and 3n edges.

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Let $G_1=(V(G_1),E(G_1))$ be the 2-complement (G_2^P) of Spl (C_n) has two partitions $W_1=\{u_1,u_3,u_5,..u_{n-1},v_1,v_3,v_5,...v_{n-1}\}$ and $W_2=\{u_2,u_4,u_6,..u_n,v_2,v_4,v_6,...v_n\}$ where $V(G_1)=\{u_i: 1\le i\le n\}\cup\{v_i: 1\le i\le n\}$ and $E(G_1)=E_1(G_1)\cup E_2(G_1)\cup E_3(G_1)\cup E_4(G_1)\cup E_5(G_1)\cup E_6(G_1)\cup E_7(G_1)\cup E_8(G_1)\cup E_9(G_1)\cup E_{10}(G_1)$ where

$E_1(G_1)=\{u_1 u_{2i+2} : 1\le i\le \frac{n-4}{2}\}$, $E_2(G_1)=\{u_i u_{i-(2j+1)} : i=5,7,9,...n-1, 1\le j\le \frac{i-3\}}{2}\}$,

$E_3(G_1)=\{u_i u_{i+2j+1} : i=3,5,7...n-3, 1\le j\le \frac{n-(i+1)\}}{2}\}$, $E_4(G_1)=\{u_1 v_{2i+2} : 1\le i\le \frac{n-4}{2}\}$,

$E_5(G_1)=\{u_i v_{i-(2j+1)} : i=5,7,9,...n-1, 1\le j\le \frac{i-3\}}{2}\}$,

$E_6(G_1)=\{u_i v_{i+2j+1} : i=3,5,7...n-3, 1\le j\le \frac{n-(i+1)\}}{2}\}$,

$E_7(G_1)=\{v_1 u_{2i+2} : 1\le i\le \frac{n-4}{2}\}$, $E_8(G_1)=\{v_i u_{i-(2j+1)} : i=5,7,9,...n-1, 1\le j\le \frac{i-3\}}{2}\}$,

$E_9(G_1)=\{v_i u_{i+2j+1} : i=3,5,7...n-3, 1\le j\le \frac{n-(i+1)\}}{2}\}$, $E_{10}(G_1)=\{v_i v_{2i} : i \text{ is odd}\}$.

Case(i): When k is odd.

Define f: $V(G_1)\to\{\left[\frac{k}{2}\right], \left[\frac{k}{2}\right]+l+1, \left[\frac{k}{2}\right]+k, \left[\frac{k}{2}\right]+k+l+1, \dots \left[\frac{k}{2}\right]+k(2n-1)\}$ by

$$f(w)=\begin{cases}\left[\frac{k}{2}\right]+\frac{k}{2}(i-1), \text{if } w=u_i \text{ for } 0\le l\le k-2, \text{i is odd},\\ \left[\frac{k}{2}\right]+\frac{k}{2}(i-2)+l+1, \text{if } w=u_i \text{ for } 0\le l\le k-2, \text{i is even},\\ \left[\frac{k}{2}\right]+k(i-1), \text{if } w=u_i \text{ for } l=k-1, 1\le i\le n,\\ \left[\frac{k}{2}\right]+\frac{k}{2}(n+i-1), \text{if } w=v_i \text{ for } 0\le l\le k-2, \text{i is odd},\\ \left[\frac{k}{2}\right]+\frac{k}{2}(n+i-2)+l+1, \text{if } w=v_i \text{ for } 0\le l\le k-2, \text{i is even},\\ \left[\frac{k}{2}\right]+k(n+i-1), \text{if } w=v_i \text{ for } l=k-1, 1\le i\le n.\end{cases}$$

Hence f is an one - to- one map and we get,

f(u)+f(v)=

$$\begin{cases}k(i+2)+l \text{ if } u=u_1, v=u_{2i+2} \text{ for } 0\le l\le k-2, 1\le j\le \frac{n-4}{2},\\ k(2i+1)+k-1, \text{if } u=u_1, v=u_{2i+2} \text{ for } l=k-1, 1\le j\le \frac{n-4}{2},\\ k(i-j-1)+l, \text{if } u=u_i, v=u_{i-(2j+1)} \text{ for } 0\le l\le k-2, i=5,7,9\dots n-1, 1\le j\le \frac{i-3}{2},\\ k(2i-2j-3)+k-1, \text{if } u=u_i, v=u_{i-(2j+1)} \text{ for } l=k-1, i=5,7,9\dots n-1, 1\le j\le \frac{i-3}{2},\\ k(i+j+2)+l, \text{if } u=u_i, v=u_{i+2j+1} \text{ for } 0\le l\le k-2, i=3,5,7,\dots n-3, 1\le j\le \frac{n-(i+1)\}}{2},\\ k(2i+2j-1)+k-1, \text{if } u=u_i, v=u_{i+2j+1} \text{ for } l=k-1, i=3,5,7,\dots n-3, 1\le j\le \frac{n-(i+1)\}}{2},\\ \frac{k}{2}(n+2i+2)+l \text{ if } u=u_1, v=v_{2i+2} \text{ for } 0\le l\le k-2, 1\le j\le \frac{n-4}{2},\\ k(n+2i+1)+k-1 \text{ if } u=u_1, v=v_{2i+2} \text{ for } l=k-1, 1\le j\le \frac{n-4}{2}.\end{cases}$$

f(u)+f(v)=

$$\begin{cases} \frac{k}{2}(n+2i-2j-2)+l, \text{if } u=u_i, v=v_{i-(2j+1)} \text{ for } 0\le l\le k-2, i=5,7,9\ldots n-1, 1\le j\le \frac{i-3}{2}, \\ k(n+2i-2j-3)+k-1, \text{if } u=u_i, v=v_{i-(2j+1)} \text{ for } l=k-1, i=5,7,9\ldots n-1, 1\le j\le \frac{i-3}{2}, \\ k(n+2i+2j)+l, \text{if } u=u_i, v=v_{i+2j+1} \text{ for } 0\le l\le k-2, i=3,5,7,\ldots n-3, 1\le j\le \frac{n-(i+1)\}}{2}, \\ k(n+2i+2j-1)+k-1, \text{if } u=u_i, v=v_{i+2j+1} \text{ for } l=k-1, i=3,5,7,\ldots n-3, 1\le j\le \frac{n-(i+1)\}}{2}, \\ \frac{k}{2}(n+2i+2)+l \text{ if } u=v_1, v=u_{2i+2} \text{ for } 0\le l\le k-2, 1\le j\le \frac{n-4}{2}, \\ k(n+2i+1)+k-1, \text{if } u=v_1, v=u_{2i+2} \text{ for } l=k-1, 1\le j\le \frac{n-4}{2}, \\ \frac{k}{2}(n+2i-2j-2)+l, \text{if } u=v_i, v=u_{i-(2j+1)} \text{ for } 0\le l\le k-2, i=5,7,9\ldots n-1, 1\le j\le \frac{i-3}{2}, \\ k(n+2i-2j-3)+k-1, \text{if } u=v_i, v=u_{i-(2j+1)} \text{ for } l=k-1, i=5,7,9\ldots n-1, 1\le j\le \frac{i-3}{2}, \\ k(n+2i+2j)+l, \text{if } u=v_i, v=u_{i+2j+1} \text{ for } 0\le l\le k-2, i=3,5,7,\ldots n-3, 1\le j\le \frac{n-(i+1)\}}{2}, \\ k(n+2i+2j+1)+k-1, \text{if } u=v_i, v=u_{i+2j+1} \text{ for } l=k-1, i=3,5,7,\ldots n-3, 1\le j\le \frac{n-(i+1)\}}{2}, \\ \frac{k}{2}(2n+3i-1), \text{ if } u=v_i, v=v_{2i} \text{ for } 0\le l\le k-2, \text{ i is odd}, \\ k(2n+3i-1), \text{if } u=v_i, v=v_{2i} \text{ for } l=k-1, \text{ i is odd}. \end{cases}$$

Since the definition of Mod(k) vertex magic labeling, the induced mapping f* is a constant mapping.

Under the mapping f, there exists mod(k) vertex magic labeling for 2-complement of Spl (C_n).

Thus G_2^P of Spl (C_n) is Mod(k)vertex magic graph if k is odd.

Case(ii): When k is even.

Define f: V(G)→{$\left[\frac{k}{2}\right]$, $\left[\frac{k}{2}\right]$+ l , $\left[\frac{k}{2}\right]$+k, $\left[\frac{k}{2}\right]$+k+ l, ... $\left[\frac{k}{2}\right]$+k(2n-1)} by

$$f(w)=\begin{cases} \left[\frac{k}{2}\right]+k(i-1), \text{if } w=u_i \text{ for } l=0, 1\le i\le n, \\ \left[\frac{k}{2}\right]+\frac{k}{2}(i-1), \text{if } w=u_i \text{ for } 1\le l\le k-1, \text{i is odd}, \\ \left[\frac{k}{2}\right]+\frac{k}{2}(i-2)+l, \text{if } w=u_i \text{ for } 1\le l\le k-1, \text{i is even}, \\ \left[\frac{k}{2}\right]+k(n+i-1), \text{if } w=v_i \text{ for } l=0, 1\le i\le n, \\ \left[\frac{k}{2}\right]+\frac{k}{2}(n+i-1), \text{if } w=v_i \text{ for } 1\le l\le k-1, \text{i is odd}, \\ \left[\frac{k}{2}\right]+\frac{k}{2}(n+i-2)+l, \text{if } w=v_i \text{ for } 1\le l\le k-1, \text{i is even}. \end{cases}$$

Clearly f is an injective mapping and we get,
f(u)+f(v)=

$$\begin{cases} k(2i+2), \text{if } u = u_1, v = u_{2i+2} \text{ for } l = 0, \ 1 \le j \le \frac{n-4}{2}, \\ k(i+2) + l \text{ if } u = u_1, v = u_{2i+2} \text{ for } 1 \le l \le k-1, 1 \le j \le \frac{n-4}{2}, \\ k(2i-2j-2), \text{if } u = u_i, v = u_{i-(2j+1)} \text{ for } l = 0, i = 5,7,9 \ldots n-1, 1 \le j \le \frac{i-3}{2}, \\ k(i-j-1) + l, \text{if } u = u_i, v = u_{i-(2j+1)} \text{ for } 1 \le l \le k-1, i = 5,7,9 \ldots n-1, 1 \le j \le \frac{i-3}{2}, \\ k(2i+2j), \text{if } u = u_i, v = u_{i+2j+1} \text{ for } l = 0, \ i = 3,5,7, \ldots n-3, 1 \le j \le \frac{n-(i+1)\}}{2}, \\ k(i+j+2) + l, \text{if } u = u_i, v = u_{i+2j+1} \text{ for } 1 \le l \le k-1, \ i = 3,5,7, \ldots n-3, 1 \le j \le \frac{n-(i+1)\}}{2}, \\ k(n+2i+2) \text{ if } u = u_1, v = v_{2i+2} \text{ for } l = 0, \ 1 \le j \le \frac{n-4}{2}. \\ \frac{k}{2}(n+2i+2) + l \text{ if } u = u_1, v = v_{2i+2} \text{ for } 1 \le l \le k-1, \ 1 \le j \le \frac{n-4}{2}, \\ k(n+2i-2j-2), \text{if } u = u_i, v = v_{i-(2j+1)} \text{ for } l = 0, i = 5,7,9 \ldots n-1, 1 \le j \le \frac{i-3}{2}, \\ \frac{k}{2}(n+2i-2j-2) + l, \text{if } u = u_i, v = v_{i-(2j+1)} \text{ for } 1 \le l \le k-1, i = 5,7,9 \ldots n-1, 1 \le j \le \frac{i-3}{2}, \\ k(n+2i+2j), \text{if } u = u_i, v = v_{i+2j+1} \text{ for } l = 0, \ i = 3,5,7, \ldots n-3, 1 \le j \le \frac{n-(i+1)\}}{2}, \\ k(n+2i+2j) + l, \text{if } u = u_i, v = v_{i+2j+1} \text{ for } 1 \le l \le k-1, \ i = 3,5,7, \ldots n-3, 1 \le j \le \frac{n-(i+1)\}}{2}, \\ k(n+2i+2), \text{if } u = v_1, v = u_{2i+2} \text{ for } l = 0, \ 1 \le j \le \frac{n-4}{2}, \\ \frac{k}{2}(n+2i+2) + l \text{ if } u = v_1, v = u_{2i+2} \text{ for } 1 \le l \le k-1, 1 \le j \le \frac{n-4}{2}, \\ k(n+2i-2j-2), \text{if } u = v_i, v = u_{i-(2j+1)} \text{ for } l = 0, i = 5,7,9 \ldots n-1, 1 \le j \le \frac{i-3}{2}, \\ \frac{k}{2}(n+2i-2j-2) + l, \text{if } u = v_i, v = u_{i-(2j+1)} \text{ for } 1 \le l \le k-1, i = 5,7,9 \ldots n-1, 1 \le j \le \frac{i-3}{2}, \\ k(n+2i+2j+2), \text{if } u = v_i, v = u_{i+2j+1} \text{ for } l = 0, \ i = 3,5,7, \ldots n-3, 1 \le j \le \frac{n-(i+1)\}}{2}, \\ k(n+2i+2j) + l, \text{if } u = v_i, v = u_{i+2j+1} \text{ for } 1 \le l \le k-1, \ i = 3,5,7, \ldots n-3, 1 \le j \le \frac{n-(i+1)\}}{2}, \\ k(2n+3i), \text{if } u = v_i, v = v_{2i} \text{ for } l = 0, \ i \text{ is odd}, \\ \frac{k}{2}(2n+3i-1), \ \text{if } u = v_i, v = v_{2i} \text{ for } 1 \le l \le k-1, \ i \text{ is odd}. \end{cases}$$

By the definition of Mod(k) vertex magic labeling, the induced mapping f* is a constant mapping.

Thus f is a mod(k) vertex magic labeling.

G_2^P of Spl (C_n) is Mod(k)vertex magic graph if k is even.

Hence 2-complement G_2^P of Spl (C_n) admits Mod(k) vertex magic labeling for all n≥ 6.

Illustration: 2. The following figures show Spl(C_8) and its 2-complement is a Mod(2) vertex magic graph for *l*=1.

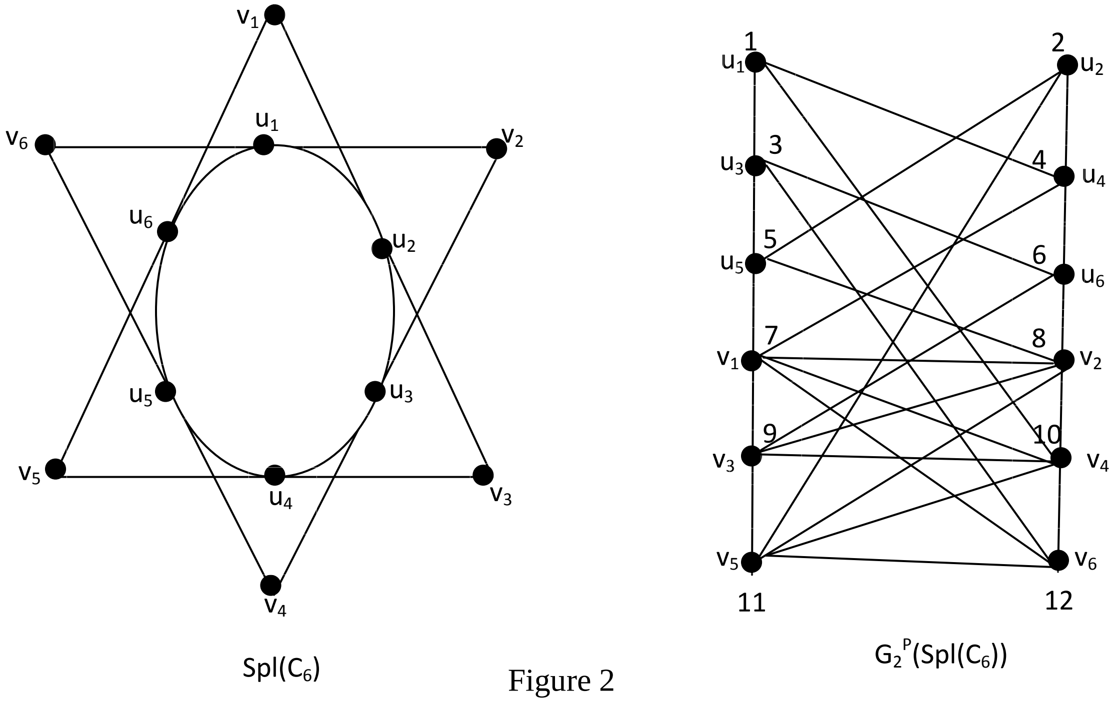

Figure 2

4. CONCLUSION

In this paper we have discussed that Generalized 2-complement of some graphs are Mod(k) vertex magic graphs. Analogues work can be carried by us for other families also.

REFERENCES

[1] A.Kotzig, A.Rosa, Magic valuation of finite graphs, Canad. Math.Bull.13 (1970) 451-461.

[2] E.Sampathkumar, L.Pushpa Latha, Generalized Complements of a graph, Indian Journal of Pure and Applied Mathematics, 29(6), 625-639, June 1998.

[3] Gee-Choon Lau, Saeid Alikhani, Sin-Min Lee, William Kocay, On k-edge- magic labelings of maximal outer planer graphs, AKCE International Journal of Graphs and Combinatorics,12, 40-46, (2015).

[4] J.A.Gallian, A dynamic survey of graph labeling, The Electronic Journal of Combinatorics, Vol.18,DS6, 2015.

[5] P.Sumathi, B.Fathima, On Mod(k) vertex magic labeling of graphs, Asian Journal of Research in Social Sciences and Humanities, Vol.6,Issue 6,No.10, 1986-1997, October 2016.

[6] P.Sumathi, B.Fathima, Modulo(Two) vertex magic labeling for Mirror graphs, International Journal of Pure and Applied Mathematics (IJPAM),Vol. 109,(Issue No.9), 116-124, 2017.

[7] P.Sumathi, B.Fathima, Mod(k) vertex magic labeling of some Non Hamiltonian graphs-Paper I, International Journal of Pure and Applied Mathematics (IJPAM),Vol. 115, (Issue No.9), 279-290, 2017.

[8] Sin-Min Lee, Hsin-hao Su,Yung-Chin Wang, On k-edge-magic Halin graphs, Congr. Numer.204, 129-145, 2010.