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VERTEX EVEN MEAN LABELING OF SOME GRAPHS WITH PENDANT EDGES

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ABSTRACT

In this paper, we investigate vertex even mean labelling with pendant edges.we prove any cycle and complete graph is a vertex even mean labelling. Similar way of plotting and labelling methodology is called a vertex even mean labelling. Here Qm + Kn and K3+Cn is a graph we used for plotting in vertex even mean labelling.

Keywords: Mean labeling, Vertex even mean labeling, Join of Graphs.

INTRODUCTION

All graphs in this paper are finite, simple and undirected. V(G) represented vertex set and E(G) represent edge set. A vertex labelling is a function of V to aset of labels. A Graph with such a vertex labelling function is defined as vertex labelled graph. The concept of mean labelling was expelled and introduced in the work by Somasundaram and Ponraj [3]. Even mean labelling of some graph work was presented by the author Revathi N in her work[5]. With the above reference and analysis we tried and investigated the possibilities of even mean labelling with Qm+Kn and K3+Cn with pendant edges.

PRELIMINARIES

DEFINITION 2.1 MEAN LABELING OF GRAPH

A Graph G With (p, q) is a mean graph if there is injective function f from the vertices of G to {0, 1, 2, …q} such that when each edge uv is labeled with (f(u)+f(v))/2 if f(u) +f(v) is even and (f(u)+f(v)+1)/2 if f(u) +f(v) is odd then the ensuring edges are different.

DEFINITION 2.2 VERTEX EVEN MEAN LABELING

A Graph G with q edges to be an vertex even mean graph if there is an injectivefunction f from the vertices of G to {2, 4, 6, … 2q} such that the edge labels aregiven by f(u) +f(v) /2 are distinct. such a function is called a vertex mean labeling.

DEFINITION 2.3 JOIN OF GRAPHS

The join of graphs k_3 and C_n, $K_3 + C_n$ is obtained by joining a vertex of k_3 withevery vertex of C_n with an edge.

DEFINITION 2.4 PENDANT EDGE

An edge of a graph is said to be a pendant edge if and only if one of its verticesis a pendant edge.

THEOREM 3.1:

MAIN RESULT

The graph obtained by adding 4 pendant edges to each vertex of k_n in the graph $Q_m + k_n$ admits vertex even mean labeling.

PROOF:

The order and size of the graph G obtained by adding 4 pendant edgesto each vertex of k_n in the graph respectively.

Let v_1 and v_2 be the vertices of Q_m, u_j $(1 \le j \le n)$ be the vertices of k_n. Obviously it u_{jt} $(1 \le t \le 4n)$ will be the pendant vertices corresponding to u_j.

Define a vertex labeling function:

f: $(Q_m + k_n) \rightarrow \{2, 4, 6, \ldots 2q\}$ by as follows

$f(v_1) = 2f(v_2) = 4\, f(v_3) = 46$

$f(v_n) = 6j + 10, j=7,8,9\ldots$

$10j - 4t, t = 1, 1 \leq j \leq 4n$

$10j - 2t + 2, t = 2, 1 \leq j \leq 4n$

$f(u_{jt})=$

{

$10j - t + 3 \ , t = 3, 1 \leq j \leq 4n$

$10j - t + 6 \ , t = 4, 1 \leq j \leq 4n$

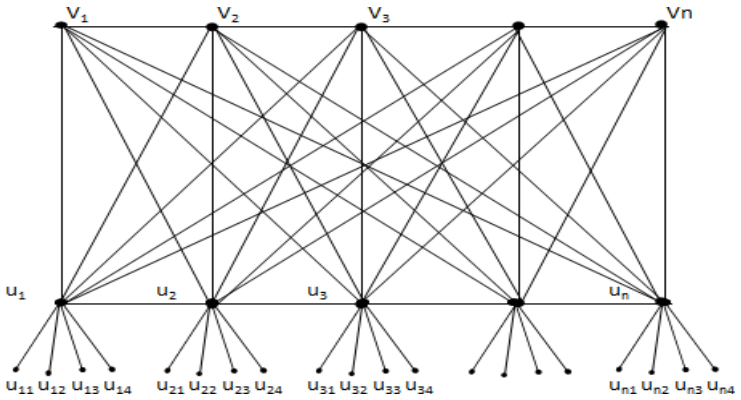


FIGURE 1

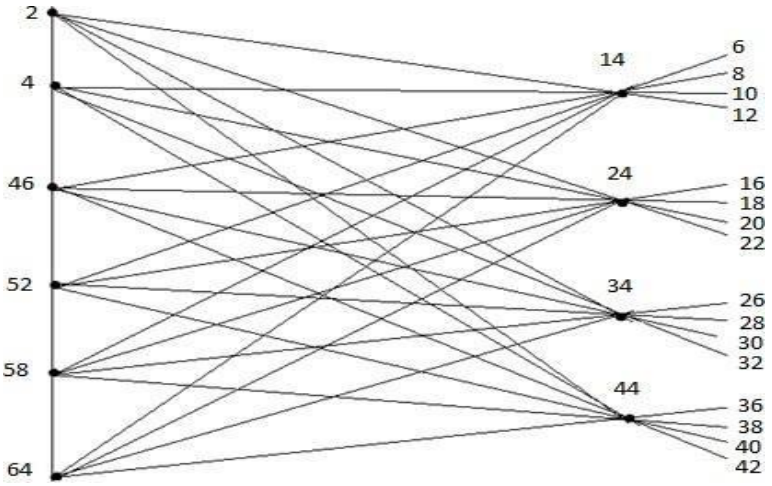
Clearly labels of the edges received by the mean of the labels on end verticesare all distinct.

Hence the graph $Q_m + k_n$ has vertex even mean labeling.

ILLUSTRATION 3.2

A graph obtained by adding 4 pendant edges to each vertex of the graph $Q_6 + k_4$

FIGURE 2



This figure 2 shows the vertex even mean labeling of the graph $Q_6 + k_4$.

THEOREM 3.2

The graph $k_3 + C_n$ has n+1 vertex even mean labeling with 2 pendant edge

PROOF:

The graph $k_3 + C_n$ has n+1 vertices and 2n edges

Let v be a vertices of k_3 and $v_1, v_2, \ldots, v_n$ be the vertices of the cycle.

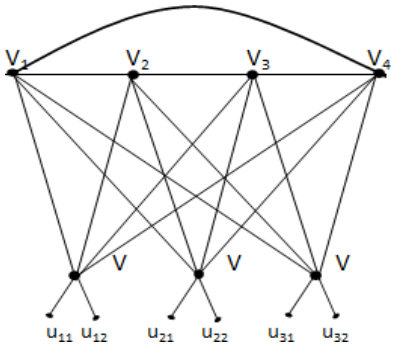


FIGURE 3

The ordinary labeling of $k_3 + C_4$ is given in the above figure

Define a vertex labeling f: v ($k_3 + C_n$)→{2, 4, 6, …, 2q} by follows as

f (u) = 2

f (v_j) = 4j, 1 ≤ j ≤ n if n is odd

$4j, j = 1$

f (v_j) = $\{2j + 4, j \text{ is even if } n \text{ is odd}$

$q + 2j + 2, j \text{ is odd}$

$10\,j + 6t$ $, t = 1, 1 \le j \le 2n$

f (u $_{jt}$) = {

$10j + 2t + 4, t = 2, 1 \le j \le 2n$

clearly labels of the edges received by the mean of the labels on end vertices areall distinct.

Hence the graph $k_3 + C_n$ has vertex even mean labeling with 2 pendant edges.

ILLUSTRATION 3.4:

A graph obtained by adding 2 pendant vertex edge to each vertex of the graph$k_3 + C_6$ and its vertex even mean labeling is given in the below figure .

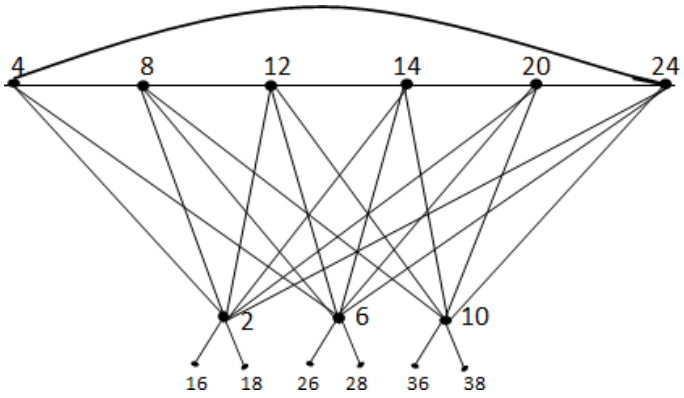


FIGURE 4

This figure 4 shows that vertex even mean labeling $k_3 + C_6$ with 2 pendantedges.

CONCLUSION:

In this paper, we have obtained some graphs that are vertex even mean labelling with pendant edges. We attempt Graph operations on cycles andcomplete graph with Qm+Kn and K3+Cn.In future, we prove yet anotherlabelling on similar graphs.

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