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Gracefulness of $^{N}c_4$ Merging With Paths

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Abstract: *Gracefulness of nc4 merging with paths*

I. Introduction:

Most graph labeling methods trace their origin to one introduced by Rosa [2] or one given Graham and Sloane [1]. Rosa defined a function f, a β-valuation of a graph with q edges if f is an injective map from the vertices of G to the set {0, 1, 2 ,…,q} such that when each edge xy is assigned the label $|f(x)-f(y)|$, the resulting edge labels are distinct.

A. Solairaju and K. Chitra [3] first introduced the concept of edge-odd graceful labeling of graphs, and edge-odd graceful graphs.

A. Solairaju and others [5,6,7,8,9] proved the results that(1) the Gracefulness of a spanning tree of the graph of Cartesian product of P_m and C_n,was obtained (2) the Gracefulness of a spanning tree of the graph of cartesian product of S_m and S_n, was obtained (3) edge-odd Gracefulness of a spanning tree of Cartesian product of P_2 and C_n was obtained (4) Even -edge Gracefulness of the Graphs was obtained (5) ladder $P_2 \times P_n$ is even-edge graceful, and (6) the even-edge gracefulness of $P_{n\ O}\ nC_5$ is obtained.

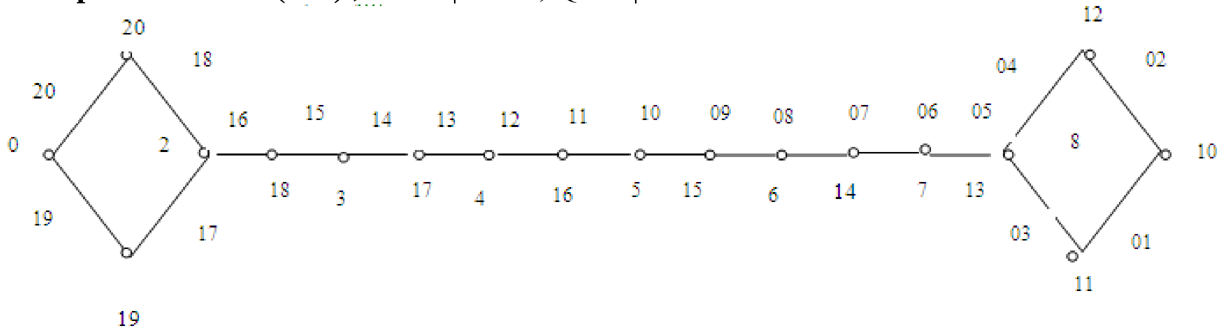
II. Section – I: Preliminaries

Definition 1.1 Let G = (V,E) be a simple graph with p vertices and q edges. A map f:V(G) -> {0,1,2,……,q} is called a graceful labeling if

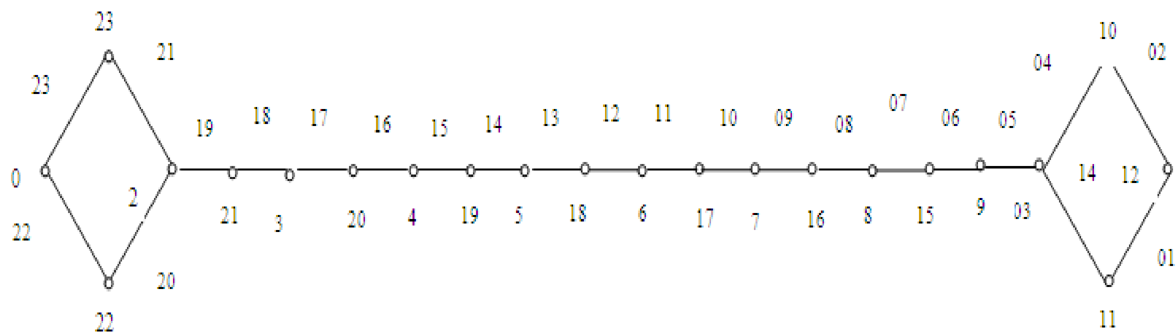
i) F is one-to-one

ii) The edges receive all the labels (numbers) from 1 to q where the label of an edge is the absolute value of the difference between the vertex labels at its end, a graph having a graceful labeling is called a graceful graph.

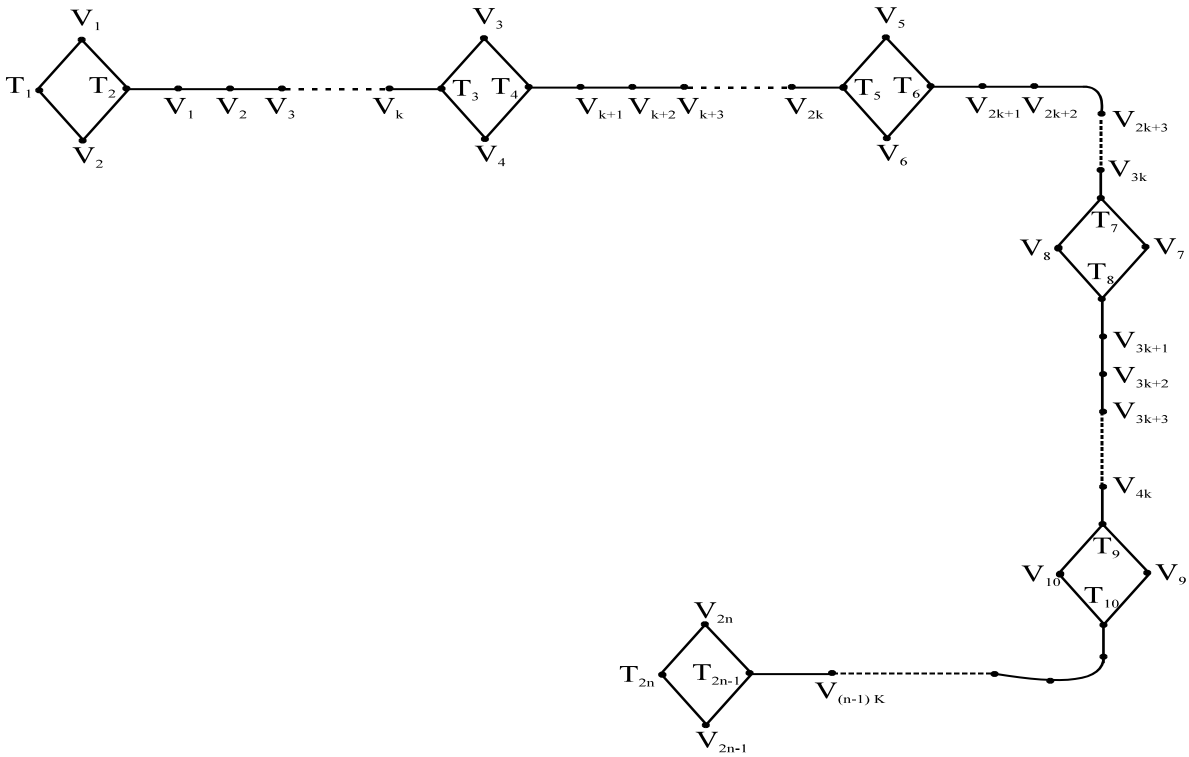
Example 1.1: k = 11 (odd) ; P: V |→ 19; Q: e |→ 20



Example 2.2: k =14 (even) ; P: V |→ 22; Q: e |→ 23



Gracefulness of nc4 merging with path generalization



Case I
K is odd
n is copies; p = V(G), q = e(G)
Define : $f : V(G) \to \{0, ..., q\}$ by
$f(T_1) = 0$,
$f(T_2) = 2$,
$f(V_1) = q$
$f(V_2) = (q) - 1$
$f(V_i) = f(V_1) -$ If i is odd.
$f(V_i) = f(V_1) - \{f(V_{i-1})\} - 1$; if $i = 4l + 2$
$f(V_i) = f(V_{i-1}) + 1$; if $i = 4l$
$f(T_i) = f(T_1) + K$; if $i = (4l + 3, 4l + 1)$
$f(T_i) = f(T_{i-1}) + 2$; if $i = (4l, 4l + 2)$

Case II
K is even
n is copies; p = V(G), q = e(G)
Define : $f : V(G) \to \{0, ..., q\}$ by
$f(V_0) = q$,
$f(V_1) = q-1$,
$f(T_1) = 0$,
$f(T_2) = 2$.
$f(V_3) = 6$,
$f(V_4) = 7$.

f (V_i) =

f (V_i) =

$f(T_i) = f(T_{i-1}) + 11;$	if $i = (4l + 1,\ 4l + 2)$
$f(T_3) = q - (K/2 + 2);$	if $i = 5, 9, 13, \ldots$
$f(T_4) = f(T_3) + 2;$	if $i = 6, 10, 14, \ldots$
$f(T_i) = f(T_{i-1}) - 13;$	if $i = 4l + 3$,
	if $i = 7, 11, 15, \ldots$
$f(T_i) = f(T_{i-1}) - 2;$	if $i = 4l$,
	if $i = 8, 12, 16, \ldots$

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