

International Journal of Innovative Research in Science, Engineering and Technology

(An ISO 3297: 2007 Certified Organization)

Vol. 4, Issue 9, September 2015

On Lucky Edge Labeling of Some Graphs

N.Ramya¹, R.Shalini²

Assistant professor, Dept. of Mathematics, Bharath University, Chennai, Tamil Nadu, India

Research Scholar, Bharath University, Chennai, Tamil Nadu, India

ABSTRACT: Let G be a simple graph with vertex set $V(G)$ and edge set $E(G)$ respectively. Vertex set $V(G)$ is labeled arbitrary by positive integers. And edge set $E(G)$ denote the edge label such that it is the sum of labels of vertices incident with edge e . The labeling is said to be lucky edge labeling if the edge set $E(G)$ is a proper coloring of G , that is if we have $E(e_1) \neq E(e_2)$ whenever e_1 and e_2 are adjacent edges. The least integer k for which a graph G has a lucky edge labeling from the set $\{1, 2, \dots, k\}$ is the lucky number of G denoted by $\eta(G)$.

A graph which admits lucky edge labeling is the lucky edge labeled graph. In this paper, it is proved lucky edge labeling of certain classes of graphs.

KEYWORDS: Lucky edge labeled graph lucky edge labeling, Lucky number

I. INTRODUCTION

A graph G is a finite non empty set of objects called vertices together with a set of pairs of distinct vertices of G which is called edges. Each $e = \{uv\}$ of vertices in E is called an edge or a line of G [4]

II. PRELIMINARIES

Definition: 2.1

Let G be a Simple Graph with Vertex set $V(G)$ and Edge set $E(G)$ respectively. Vertex set $V(G)$ are labeled arbitrary by positive integers and let $E(e)$ denote the edge label such that it is the sum of labels of vertices incident with edge e [5].

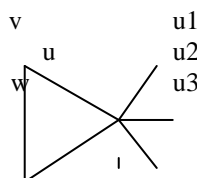
The labeling is said to be lucky edge labeling if the edge set $E(G)$ is a proper coloring of G , that is, if we have $E(e_1) \neq E(e_2)$ whenever e_1 and e_2 are adjacent edges. The least integer k for which a graph G has a lucky edge labeling from the set $\{1, 2, \dots, k\}$ is the lucky number of G denoted by $\eta(G)$. A graph which admits lucky edge labeling is the lucky edge labeled graph[1].

Definition: 2.2

A Fish tail graph G is defined as follows.

Let G be the graph with $V(G) = \{u, u_i, w, z; 1 \leq i \leq n\}$ and edgeset $E(G) = \{uv, vw, wu, uu_i; 1 \leq i \leq n\}$

Example;



III. MAIN RESULTS

Theorem1;

A fish tail graph which admits a lucky edge labeling[6].

Proof;

The vertex labeling of this graph is defined by

International Journal of Innovative Research in Science, Engineering and Technology

(An ISO 3297: 2007 Certified Organization)

Vol. 4, Issue 9, September 2015

- i) $f(u)=1$
- ii) $f(v)=2$
- iii) $f(w)=3$
- iv) $f(u_i)=1$

When $i=2,3,\dots$

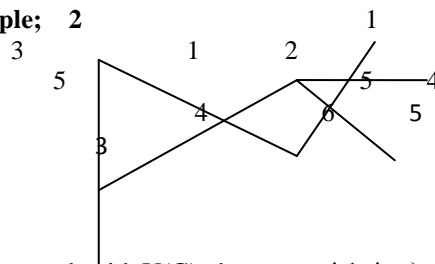
- v) $f(u_i)=n-1$, $2 \leq i \leq n$ where n denote number of vertices.

The edge labeling is of the form[7]

- i) $f(u,v)=3$
- ii) $f(v,w)=5$
- iii) $f(w,u)=4$
- iv) $f(u,u_i)=2$

When $i=2,3,\dots$ $f(u,u_i)=n$; $2 \leq i \leq n$ where n denote number of vertices.

Example; 2



Theorem2;

Let G be the graph with $V(G)=\{u,u_i,w,x,u_i; 1 \leq i \leq n\}$ and edgeset $E(G)=\{uv,vw,wu,u_i u; 1 \leq i \leq n\}$ This graph which admits a lucky edge labeling[8].

Proof;

The vertex labeling of this graph is defined by

- v) $f(u)=1$
- vi) $f(v)=1$
- vii) $f(w)=2$
- viii) $f(x)=2$

When $i=1,2,3,\dots$

- v) $f(u_i)=n-1$ where n denote number of vertices.

The edge labeling is of the form

- v) $f(u,v)=2$
- vi) $f(v,w)=3$
- vii) $f(w,u)=4$
- viii) $f(x,u)=3$

When $i=1,2,3,\dots$ $f(u,u_i)=j+1$, where $j=3,4,\dots$ respectively[9].

IV. CONCLUSION

In this paper it is proved lucky edge labeling of certain type of graphs. It is interest to extend these type graphs like Peterson graphs, Hamiltonian graphs, Eulerian graphs, Planar graphsetc.

REFERENCES

- [1] Bollobas.B "MODERN GRAPH THEORY", Graduate texts in Mathematics, vol.184.,springer-verlag,1998.
- [2].Kiran B., Kareem S.A., Illamani V., Chitrakleha S., "Case of Phthiriasis palpebrarum with blepheroconjunctivitis", Indian Journal of Medical Microbiology, ISSN : 0255-0857, 30(3) (2012) PP. 354-356..
- [3]Chartand,G.;Johns.G.L., Mc Keon,K.A and Zlang,P. "RAINBOW CONNECTION IN GRAPHS",Math.Bohem.vol.133,PP 85-98.2008
- [4].Jayaraman B., Valiathan G.M., Jayakumar K., Palaniyandi A., Thenumgal S.J., Ramanathan A., "Lack of mutation in p53 and H-ras genes in phenytoin induced gingival overgrowth suggests its non cancerous nature", Asian Pacific journal of cancer prevention : APJCP, ISSN : 13(11) (2012) PP. 5535-5538.

International Journal of Innovative Research in Science, Engineering and Technology

(An ISO 3297: 2007 Certified Organization)

Vol. 4, Issue 9, September 2015

- [5] Chakraborty.S.;Fisher,E.,Matsliah,A.and Yuster, R. "HARDNESS AND ALGORITHMS FOR RAINBOW CONNECTION,"J.Combin.optimization,PP,1-18,2009.
- [6].Kalaiselvi V.S., Saikumar P., Prabhu K., Prashanth Krishna G., "The anti Mullerian hormone-a novel marker for assessing the ovarian reserve in women with regular menstrual cycles", Journal of Clinical and Diagnostic Research, ISSN : 0973 - 709X, 6(10) (2012) PP.1636-1639.
- [7].N.Ramya, K.Rangarajan "ON EDGEMAGIC LABELING OF SOME GRAPHS" IJPAM,vol6,no.4,PP277-281,2013
- [8].Subhashree A.R., Shanthy B., Parameaswari P.J., "The Red Cell Distribution Width as a sensitive biomarker for assessing the pulmonary function in automobile welders- a cross sectional study", Journal of Clinical and Diagnostic Research, ISSN : 0973 - 709X, 7(1) (2013) PP. 89-92.
- [9].Gopalakrishnan K., Prem Jeya Kumar M., Sundeep Aanand J., Udayakumar R., "Analysis of static and dynamic load on hydrostatic bearing with variable viscosity and pressure", Indian Journal of Science and Technology, ISSN : 0974-6846, 6(S6) (2013) PP.4783-4788.