Abstract

Let $\mathbb{N}_0$ denote the set of all non-negative integers and $X$ be any subset of $X$. Also denote the power set of $X$ by $P(X)$. An integer additive set-labeling (IASL) of a graph $G$ is an injective function $f : V(G) \to P(X)$ such that the induced function $f^+ : E(G) \to P(X)$ is defined by $f^+(uv) = f(u) + f(v)$, where $f(u) + f(v)$ is the sumset of $f(u)$ and $f(v)$. An IASL $f$ is said to be a topological IASL (Top-IASL) if $f(V(G))$ is a topology of the ground set $X$. An IASL is said to be an integer additive set-graceful labeling (IASGL) if for the induced edgefunction $f^+, f^+(E(G)) = P(X) \setminus f^0g$. In this paper, we study certain types of IASL of a given graph $G$, which is a topological integer additive set-labeling as well as an integer additive set-graceful labeling of $G$.

References

1. B. D. Acharya, Set-Valuations and Their Applications, MRI Lecture notes in Applied Mathematics, No.2, The Mehta Research Institute of Mathematics and Mathematical Physics, Allahabad, 1983.
2. B. D. Acharya, Set-Indexers of a Graph and Set-Graceful Graphs, Bulletin of Allahabad Mathematical Society, 16(2001), 1-23.

3. B. D. Acharya, K. A. Germina, K. L. Princy and S. B. Rao, Topologically Set-Graceful Graphs, Journal of Combinatorics, Information and System Sciences, 37(2-4)(2012), 299-318.

4. J. A. Bondy and U. S. R. Murty, Graph theory with applications, Macmillan Press, London, 1976.

5. A. Brandst’adt, V. B. Le and J. P. Spinrad, Graph Classes: A Survey, SIAM, Philadelphia, 1987.

6. J. A. Gallian, A Dynamic Survey of Graph Labelling, The Electronic Journal of Combinatorics, DS-6, 2013.

7. K. A. Germina and T. M. K. Anandavally, Integer Additive Set-Indexers of a Graph: Sum Square Graphs, Journal of Combinatorics, Information and System Sciences, 37(2-4)(2012), 345-358.

8. K. A. Germina and N. K. Sudev, On Weakly Uniform Integer Additive Set-Indexers of Graphs, International Mathematical Forum, 8(37)(2013), 1827-1834. DOI: 10.12988/imf.2013.310188.

9. K. D. Joshy, Introduction to General Topology, New Age International, New Delhi, 1983.

10. V. Krishnamoorthy, On the Number of Topologies of Finite Sets, The Amer. Math. Monthly, 73(2)(1966), 154-157.

11. F. Harary, Graph Theory, Addison-Wesley Publishing Company Inc., Philippines, 1969.

12. W. Imrich, S. Klavzar, Product Graphs: Structure and Recognition, Wiley, 2000.

13. K. D. Joshi, Applied Discrete Structures, New Age International, New Delhi, 2003.

14. J. R. Munkers, Topology, Prentice Hall, Vol.2., 2000.

15. A. Rosa, On Certain Valuation of the Vertices of a Graph, in Theory of Graphs, Gordon and Breach, 1967, 349-355.

16. N. K. Sudev and K. A. Germina, On Integer Additive Set-Indexers of Graphs, International Journal of Mathematical Sciences & Engineering Applications, 8(2)(2014),11-22.

17. N. K. Sudev and K. A. Germina, Some New Results on Strong Integer Additive Set-Indexers of Graphs, Discrete Mathematics, Algorithms & Applications, 7(1)(2015),1-11., DOI: DOI:10.1142/S1793830914500657.

18. N. K. Sudev, K. A. Germina and K. P. Chithra, A Creative Review on Integer Additive Set-Labeled Graphs, Asian-European Journal of Mathematics, to appear., DOI:10.1142/S1793557115500527.

19. N. K. Sudev and K. A. Germina, The exquisite Integer Additive Set-Labeling of Graphs, International Journal of Science and Research, 4(3)(2015), 2858-2862.

20. N. K. Sudev and K. A. Germina, A Study on Topological Integer Additive Set-Labeling of Graphs, Electronic Journal of Graph Theory and Applications, 3(1)(2015), 70-84.DOI:10.5614/ejgta.2015.3.1.8.

21. N. K. Sudev and K. A. Germina, A Study on Integer Additive Set-Graceful Graphs, Journal of Pure and Applied Mathematics, to appear.

22. D. B. West, Introduction to Graph Theory, Pearson Education Inc., 2001.

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