A.P.C. MAHALAXMI COLLEGE FOR WOMEN

THOOTHUKUDI - 2

CRITERION 3

SSR CYCLE IV

RESEARCH, INNOVATIONS AND EXTENSION

3.3. Research Publication and Awards

3.3.2.1: Total number of books and chapters in edited volumes/books published and papers in national/ international conference proceedings year wise during last five years

To whomsoever it may concern

I hereby declare that the following details and documents are true to the best of my knowledge. They have been checked and verified.

3.3.2. Number of books, chapters and papers in conference proceedings

S. No	Academic Year	No. of Books	No. of Chapters	No. of Conference Proceedings	Total
1	2022-2023	23	25	43	91
2	2021-2022	09	16	19	44
3	2020-2021	14	10	25	49
4	2019-2020	16	15	29	60
5	2018-2019	02	06	06	14

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2021-2022
Proceedings

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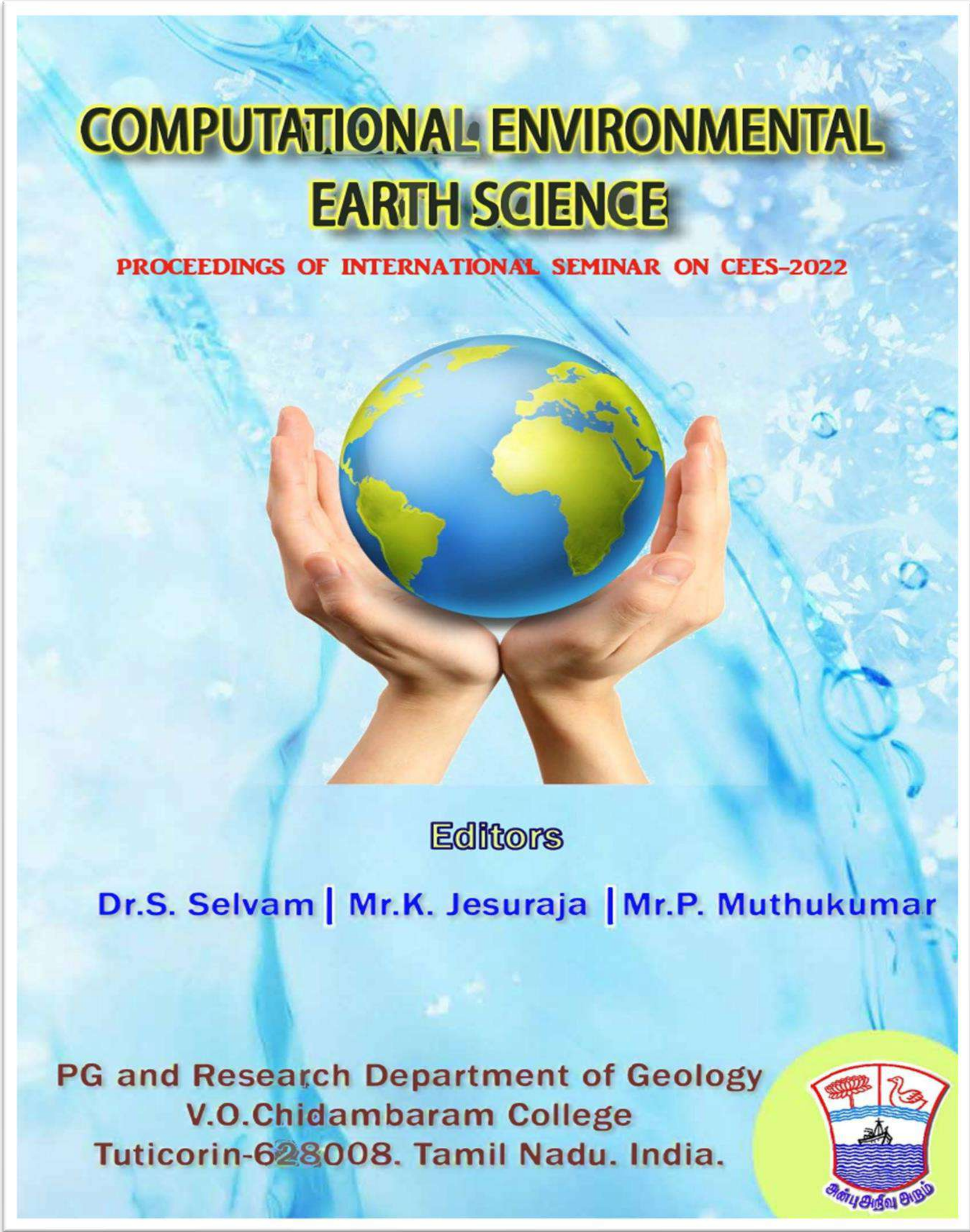
COMPUTATIONAL ENVIRONMENTAL
EARTH SCIENCE
PROCEEDINGS OF INTERNATIONAL SEMINAR ON CEES-2022
Editors
Dr.S. Selvam | Mr.K. Jesuraja | Mr.P. Muthukumar
PG and Research Department of Geology
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Computational Environmental Earth Science

PROCEEDINGS OF INTERNATIONAL SEMINAR ON CEES-2022

Edited By

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Since 1951

PG and Research Department of Geology
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Tamil Nadu. India.

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1. **Dr. R. Rajeswari – Environmental Awareness of Girls – A Fuzzy Approach**

Conference proceeding
International Seminar on "Computational Environmental Earth Science" (CEES 2020)

ENVIRONMENTAL AWARENESS OF GIRLS - A FUZZY APPROACH

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Abstract
Environmental awareness means being aware of the natural environment and making ways which helps to benefit the earth. Women play an inevitable role in managing natural resources and environmental sustainability of the world. Being the empowering women, the girls of Arts and Science Colleges should have environmental awareness and positive attitude towards it. This Paper is an attempt to reveal the environmental awareness of girls of Arts & Science College with the help of mathematical fuzzy approach for the interpretation.
Key Words: *Environmental awareness, fuzzy approach, women's role, sustainability.*

Introduction

The Fuzzy set theory is a generalization of classical set theory. The Fuzzy set theory was introduced by Professor LoftiA.Zadeh in 1965 and can be seen as an infinite value. Then his research interests have been shifted to the theory of Fuzzy logic, soft computing, computing with words, and the newly developed computational theory of perceptions and natural language. Fuzzy logic theory is based on making the membership function lie over a range of real numbers from 0.0 to 1.0 .The fuzzy set is characterized by (0.0, 0, 1.0).

Environmental awareness can be defined as knowing the impact of human behavior on the environment. Li and Chen consider environmental awareness as the formation of cognition in memory through the process of sensory stimulation, notice, identification, and perception. While environmental behaviour refers to human activities to protect the environment, environmental awareness refers to people's understanding and awareness of the environment and the related issues (such as waste disposal, noise and air pollution, water pollution, soil pollution, ozone layer destruction, greenhouse effect, and acid rain) . Based on Kaiser et al., environmental behaviour has six indicators, namely: (1) energy savings, (2) mobility and transportation, (3) prevention of waste, (4) recycling, (5) consumption, (6) behaviour that aims to conserve nature. These six indicators can be used to measure how 'good' or 'bad' the environmental behaviour of each individual is. The existing environmental behaviour must emerge without the need to be encouraged by the surrounding conditions and firmness of the policy alone.

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2. Dr. R. Rajeswari - Neutrosophi Fuzzy Bi – ideals in Boolean Like Semi Rings

National Seminar on Recent Trends in Mathematics (RTIM2022)

Thoothukudi, Tamil Nadu, 22nd April, 2022

Neutrosophic Fuzzy Bi - ideals in Boolean like semi rings

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Abstract:

The aim of this paper is to introduce the concept of Neutrosophic Fuzzy bi -ideals in Boolean like semi rings and also investigate some of the theorems in detail. We also obtain some characterisations and complete theorems for Boolean like semi-rings.

Keywords:

Fuzzy set, Neutrosophic fuzzy ideal, fuzzy bi-ideal, Neutrosophic fuzzy bi-ideal.

1. Introduction

Zadeh proposed the notion of a fuzzy set in 1965. Boolean like semi rings were introduced by K. Venkateswarlu, B.V.N. Murthy and N. Amarnath. The concept of neutrosophy was introduced by Florentin Smarandache[10]as a new branch of philosophy. Neutrosophy is a base of Neutrosophic logic which is an extension of fuzzy logic in which indeterminancy is included.In Neutrosophic logic, each proposition is estimated to have the percentage of truth in a subset T, percentage of indeterminancy in a subset I, and the percentage of falsity in a subset F.The theory of neutrosophic set have achieved great success in various fields like medical diagnosis, image processing, decision making problem ,robotics and so on. I.Arockiarani[3] consider the neutrosophic set with value from the subset of [0,1] and extended the research in fuzzy neutrosophic set.J.Martina Jency and I.Arockia rani [8] initiate the concept of subgroupoids in fuzzy neutrosophic set. A. Solairaju and S. Thiruveni have introduced the concept of Neutrosophic Fuzzy Ideals in near rings. R.Rajeswari, S.Ragha and N. Meenakumari have introduced the concept of Neutrosophic ideals in Boolean like semi-rings. In this paper, we introduce the concept of Neutrosophic Fuzzy bi - ideals in Boolean like semi rings and we have discussed some

3. Dr. R. Rajeswari – Diameter Lucky Number of Some Zero-Divisor Graphs

National Seminar on Recent Trends in Mathematics (RTIM2022)

Thoothukudi, Tamil Nadu, 22nd April, 2022

DIAMETER LUCKY NUMBER OF SOME ZERO-DIVISOR GRAPHS

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Abstract:

Let $G = (V, E)$ be a graph with n vertices and m edges. A graph G admits diameter lucky labeling if $f: V(G) \to \{1,2,3, \dots, n\}$ be a labeling of vertices and set of vertices of graph G by a positive integers defined by $c(u) = \sum_{v \in N(v)} f(v) + diam(G)$, where $diam(G)$ is the diameter of a graph G, $N(v)$ is open neighborhood of v. A labeling is called diameter lucky labeling if $c(u) \neq c(v)$ for every pair of adjacent vertices u and v in G. The diameter lucky number is the least positive labeling and it is denoted by $\eta_{diami}(G)$. The graph which admits such types of labeling is called Diameter lucky graphs. In this paper we have introduce diameter lucky labeling and investigated diameter lucky number for some zero-divisor graphs.

Keywords: Diameter-lucky labeling, Zero-divisor graphs

AMS Subject Classification: 05C25, 05C78.

4. Dr. V. Maheswari - Vertex-Edge Neighbourhood Prime Labeling of Special Graphs

National Seminar on Recent Trends in Mathematics (RTIM2022)

Thoothukudi, Tamil Nadu, 22nd April, 2022

VERTEX -EDGE NEIGHBOURHOOD PRIME LABELING OF SPECIAL GRAPHS

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Abstract

The concept of vertex edge neighbourhood prime labeling of graph was introduced by Parul B Pandya & N P Shrimali. Let G be a graph with vertex set V(G) and edge set E(G). For $u \in V(G)$,
$N_V(u) = \{w \in V(G) / uw \in E(G)\}$ and $N_E(u) = \{e \in E(G) / e = uv$, for some $v \in V(G)\}$. A vertex edge neighbourhood prime labeling is a function $f: V(G) \cup E(G) \rightarrow \{1,2,\ldots|V(G) \cup E(G)|\}$ with one to one correspondence and if,

(1) For $u \in V(G)$ with $\deg(u)=1$
 gcd $\{f(w), f(uw) / w \in N_V(u)\}=1$
(2) For $u \in V(G)$ with $\deg(u) \geq 2$
 gcd $\{f(w) / w \in N_V(u)\}=1$
 gcd $\{f(e) / e \in N_E(u)\}=1$

A graph which admits vertex edge neighbourhood prime labeling is called a vertex edge neighbourhood prime graph.

In this paper we investigate vertex edge neighbourhood prime labeling for some graphs namely, Jelly fish graph $J(m,n)$, every even cycle C_{2n} with 2n-3 chords, Tadpole graph $T(m,n)$ if m is odd, Lollipop graph ($L_{3,n}$ & $L_{4,n}$), $<C_3, K_{1,m}>$, $C_3@(nk_1)^2$

Keywords: Prime labeling, Neighbourhood prime labeling, Vertex-Edge Neighbourhood prime labeling.

1 Introduction

In the past many years prime labeling for different graphs have been published in so many research papers. For the complete list of results regrading prime graphs, reader may refer [1]. S.K. Patel and N.P. Shrimali [4] introduced neighbourhood-prime labeling. Rajesh T K and Mathew R K introduced Total neighbourhod prime labeling. They proved the path, cycle and comb graphs are total neighbourhood prime graphs. All graphs in this paper are finite, simple, undirected and connected. For all terminologies and notations in graph theory we follow [2] and results regrading number theory we follow David M. Burton. Parul B Pandya, N P Shrimali [3] introduced vertex-edge Neighbourhood prime labeling for graphs.

In this paper, we proved some special graphs like Jelly fish graph, C_{2n} with $2n$-3 chords, $T(m,n)$, $L_{3,n}$, $L_{4,n}$, $<C_3,K_{1,n}>$, $C_3@(nK_1)^2$.

5. Dr. V. Maheswari - On Total Neighbourhood Prime Labeling

National Seminar on Recent Trends in Mathematics (RTIM2022)

Thoothukudi, Tamil Nadu, 22nd April, 2022

ON TOTAL NEIGHBOURHOOD PRIME LABELING

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Abstract

Rajesh Kumar T.J and Mathew Varkey T.K introduced the notion of total neighbourhood prime labeling. Let G = (V, E) be a graph with p vertices and q edges. A labeling f : V∪E {1,2,3..........(p+q)} is said to admit total neighbourhood prime labeling if for each vertex of degree atleast two, the labeling on its adjacent vertices are relatively prime and for each vertex of degree atleast two, the gcd of the labels on the incident edges is one. A graph which admits total neighbourhood prime labeling is called total neighbourhood prime graph. In this paper, we investigate the existence of prime labeling of Coconut tree, Jelly fish, $K_{2,m}$, $K_{2,m} \cup P_n$, $<C_3, K_{1,m}>$, $S_m \cup S_n$, $S_m + \overline{K}_2$

Keywords: Prime Labeling, Neighbourhood Prime labeling, Total neighbourhood Prime labeling.

1.INTRODUCTION

Total neighbourhood prime labeling was introduced by Rajesh Kumar T J and Mathew Varkey T K and proved paths and cycles are total neighbourhood prime graphs. They also prove that the comb graph is total neighbourhood prime graph with two cases.

In this paper we investigate total neighbourhood prime labeling of disjoint union of star graphs, cocount tree, jelly fish, $K_{2,m}$, $K_{2,m} \cup P_n$, $\langle C_3, K_{1,m} \rangle$, $S_m + \overline{K_2}$.

Definition 1.1

Let G = $(V(G), E(G))$ be a graph with p vertices. A bijection f : $V(G) \rightarrow \{1,2,3 \ldots, p\}$ is called prime labeling if for each edge $e = uv$, $\gcd(f(u), f(v)) = 1$. A graph which admits prime labeling is called a **Prime graph**.

Definition 1.2

Let G = $(V(G), E(G))$ be a graph with p vertices. A bijection f : $V(G) \rightarrow \{1,2,3 \ldots, p\}$ is called prime labeling if for each vertex v∈ $V(G)$ with deg(v)> 1, $\gcd\{f(u) : u \in N(v)\} = 1$. A graph which admits neighbourhood prime labeling is called a **Neighbourhood prime graph**. **Definition 1.3**

Let G = (V, E) be a graph with p vertices and q edges. A bijection

6. Dr. T. Chellammal – Consumers Attitude towards UPI Payment Methods in Mudukulathur Ramanathapuram District

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Consumers Attitude towards UPI Payment Methods in Mudukulathur Ramanathapuram District

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Introduction

The Digital innovation emerging in recent years is no longer unique because the scenario has changed the life of an individual and the inclusion of digital mode of transaction blends well and makes the financial liabilities easier to pay or to receive. Though there are many digital payment methods embracing the Unified payment interface that is well known as UPI payment method found very easy means to transact money by receiving or paying through as UPI ID, mobile number or QR code scanning. Some of the well known UPI applications are like Google pay (formerly Google Tez),Pay Tm, Phone pe, Mobiwik, etc., By UPI consumer can make instant money transfer from one bank to another bank account, book tickets, Bill Payments, Recharge and also pay merchants who accept UPI as payment mode. This UPI came into existence in India since 2016 and considered to be the effective mode of digital payment method. The NPCI (National Payments Corporation of India) that operates retail payments and settlement systems in India initiates the revolutionary UPI payment systems that was established by the Reserve Bank of India (RBI) and Indian Banks Association (IBA). According to NPCI UPI Daily Product Statistics trended March 2022 UPI transaction value in crores was Rs.33, 957.63. In Monthly product statistics number of Banks live on UPI Feb -22 was 304, and the transaction value in crore was Rs. 8, 26,843.00. UPI payment method fulfills the customer expectancy and ascertains the solution in the digital payment methods.

Objective of the Study

- To identify about the purpose of using UPI payments by the consumers.
- To study the attitude of the consumer towards using UPI Payment method as a means of digital payments.

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CONTENTS

7. Dr. R. Rajeswari - A Study on Cycle Subgroup Graph of a Finite Group

A STUDY ON CYCLIC SUBGROUP GRAPH OF A FINITE GROUP

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Abstract: The cyclic subgroup graph $\Gamma_z(G)$ for a finite group G is a simple undirected graph in which the cyclic subgroups are vertices and two distinct subgroups are adjacent if one of them is a subset of the other. In this paper, we have discussed some properties of all these structures in detail and obtained some theorems on cyclic subgroup graphs of finite groups.

Keywords: Cyclic Subgroup graph, domination number, chromatic number, radius, diameter, girth.

1 Introduction

Algebraic graphs are graphs constructed from algebraic structures such as groups, rings etc. Ma, X.L., H.Q. Wei and Guozhong(2013) have introduced the concept of Cyclic graph of a finite group. After that, J. John Arul Singh and S. Devi have introduced Cyclic Subgroup Graph of a finite group. The concept of Subgroup Intersection graph of a group was introduced by T. Tamizh Chelvam and M. Sattanathan. All these graphs were constructed from groups whose vertices are the group elements itself and edges are constructed considering some properties of pairs of elements. This approach of Algebraic graph theory makes the complex things simpler. That is a more complex group structure based on binary operations is converted to a relatively simpler form graphs which are based on relation of elements. Once the graphs are constructed from groups the properties of the group are discussed via the graph properties. In this paper, we have discussed some properties and parameters of all these structures in detail and obtained some theorems on cyclic subgroup graphs of finite groups.

2 Preliminaries

Definition: 2.1 [5] The cyclic subgroup graph $\Gamma_z(G)$ for a finite group G is a simple undirected graph in which the cyclic subgroups are vertices and two distinct subgroups are adjacent if one of them is a subset of the other.

Definition: 2.2 [4] Two graphs G and H are said to be isomorphic if there is a bijection mapping between the vertex set of G and H, such that $f(a)$ and $f(b)$ are adjacent in H iff a and b are adjacent in G. We write $G \cong H$.

8. Dr. K. Palani – Radio Mean Labeling of More Inflated Graphs

RADIO MEAN LABELING OF MORE INFLATED GRAPHS

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Abstract: Let G=(V,E) be a simple graph with vertices and edges.For a connected graph G of diameter , a radio mean labeling is a one to one mapping f from V(G) to N satisfying the condition $d(u, v) + \lceil \frac{f(u)+f(v)}{2} \rceil \geq 1 + diam(G)$ for every $u,v \in V(G)$. The span of a labeling is the maximum integer that f maps to a vertex of G. The radio mean number of G, $rmn(G)$ is the lowest span taken over all radio mean labelings of the graph G. In this paper, we analyze inflated graphs of comb, hurdle, crown and $HP_n \odot K_1$ for radio mean labeling.

Keywords: Radio Mean, Radio Mean Number, Radio Mean Labeling.
AMS Subject Classification: 05C78.

1 Introduction

The graph [1]labeling problem is one of the recent developing area in graph theory. Alex Rosa first introduced this problem in 1967[8]. Radio labeling is motivated by the channel assignment problem introduced by W. K. Hale in 1980[3].In 2001, Gary Chartrand defined the concept of radio labeling of G[1].Liu and Zhu first determined the radio number in 2005[4].Ponraj et al.[6] introduced the notion of radio mean labeling of graphs and investigated radio mean number of some graphs [7].

Radio Labeling is used for X-ray, crystallography, coding theory, network security, network addressing, channel assignment process, social network analysis such as connectivity, scalability, routing, computing ,cell biology etc.,

The following results are used in the subsequent section.

Definition: 1.1 Let G=(V,E) be a simple graph with vertices and edges.For a connected graph G of diameter , a radio mean labeling is a one to one mapping f from V(G) to N satisfying the condition $d(u, v) + \lceil \frac{f(u) + f(v)}{2} \rceil \geq 1 + diam(G)$ for every $u,v \in V(G)$ The span of a labeling is the maximum integer that maps to a vertex of G. The radio mean number of G, $rmn(G)$ is the lowest span taken over all radio mean labelings of the graph G. In this paper, we analyze some inflated graphs for radio mean labeling.

Definition: 1.2[2] The **Inflation** of a graph is obtained from by replacing every vertex of degree $d(x)$ by a clique $X = K_{d(x)}$ and each edge xy by an edge between two vertices of the corresponding cliques X and Y of G_1 in such a way that the edges of G which come from the edges of form a matching of G_1 .

The following is the example of inflation of comb graph:

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9. Dr. K. Palani – Certified Doninating Energy of a Graph

CERTIFIED DOMINATING ENERGY OF A GRAPH

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Abstract: Let G=(V,E) be a (p, q) graph. A subset S of V (G) is said to be certified dominating set if S is a dominating set of G so that every vertex in S has either zero or at least two neighbors in V-S. The minimum cardinality of a certified dominating set is the certified dominating set of G, and is denoted by $\gamma_{cer}(G)$.

The γ_{cer}-matrix is defined as $\gamma_{cer}(C_{ij}) = \begin{cases} 1 & if\ v_i v_j \in E(G) \\ 1 & if\ i = j\ and\ v_i \in S \\ 0 & otherwise \end{cases}$

The $\gamma_{cer} - energy$ of G is the sum of absolute values of the eigen values of the matrix $\gamma_{cer}(C_{ij})$.

That is $E(\gamma_{cer}(G)) = \sum_{i=1}^{p} |\lambda_i|$. In this paper we studied the certified dominating energy of some graphs. Also we write MATLAB algorithms and programs to find $E(\gamma_{cer}(G))$.

Keywords: Domination, certified domination, certified dominating matrix, Eigen values and energy

AMS subject classification: 05C50, 05C90, 15A18

1 Introduction

In this article we consider finite, undirected and simple graph G with vertex set V(G) and edge set E(G). The number of vertices and number of edges are denoted by p and q respectively. A complete graph K_p is a simple undirected graph in which every pair of distinct vertices is connected by a unique edge. The star graph $K_{1,p-1}$ of order p is a tree on p nodes with one node having vertex degree p-1 and the other p-1 having vertex degree 1. The characteristic polynomials are computed using an online tool https://www.dcode.fr/matrix-eigenvalues.The distance $d(u, v)$ is the length of the minimum path from vertex u to vertex v. Let $\lambda_1, \lambda_2, \dots \lambda_p$ be the eigenvalues of G. Then the spectrum of G is denoted by

$$spec\ G = \begin{cases} \lambda_1 & \lambda_2 & \dots & \lambda_p \\ m_1 & m_2 & \dots & m_p \end{cases}$$

Where m_i is the algebraic multiplicity of the eigen values $\lambda_i, for\ 1 \le i \le p$.

The concept of energy E(G) was proposed by I Gutman in 1978 [3] as the sum of absolute values of the eigen values of the adjacency matrix of G. The basic properties including various upper

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10. Dr. K. Palani – Neighborhood Prime Labeling in Some Product Digraphs – I

NEIGHBORHOOD PRIME LABELING IN SOME PRODUCT DIGRAPHS – I

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Abstract: Let $D(p,q)$ be a digraph. A function $f: V \to \{1,2,\dots,n\}$ is said to a neighborhood prime labeling of D if it is both in and out degree neighborhood prime labeling. In this paper, we investigate the existence of neighborhood prime labeling in Cartesian product of various digraphs.

Keywords: Neighborhood prime labeling, Digraphs, Crown.
AMS Subject Classification: 05C78.

1 Introduction

A graph labeling is an assignment of integers to the vertices or edges or both subject to certain conditions. The concept of graph labeling was introduced by Rosa in 1967 [10]. A useful survey on graph labeling by J.A. Gallian (2014) can be found in [2]. Patel S K and Shrimali N P [7] have introduced the neighborhood prime labeling of graphs. A directed graph or digraph D consists of a finite set V of vertices and a collection of ordered pairs of distinct vertices. K. Palani et.al. introduced the concept of neighborhood prime digraphs in [9]. In this paper, we investigate some digraphs for neighborhood prime labeling.

2 Preliminaries

The following definitions are from [1, 4, 5, 6, 7, 8 & 9]

Definition: 2.1 Let $D(p,q)$ be a digraph. A function $f: V(D) \to \{1,2,\dots,n\}$ is said to a ***neighborhood prime labeling of*** D if it is both in and out degree neighborhood prime labeling.

Observations: 2.2

1. If D is a digraph such that $N^+(u)$ or $N^-(u)$ are either $\emptyset$ or singleton set, then D admits neighborhood prime labeling.
2. A neighborhood prime digraph D in which every vertex of in-degree or out-degree at most 1, is neighborhood prime.

Definition: 2.3 The ***Cartesian product*** of a family of digraphs $D_1, D_2, \dots, D_n$ denoted by $D_1 \times D_2 \times \dots \times D_n$ or $\prod_{i=1}^{n} D_i$ where $n \geq 2$ is the digraph D having $V(D) = V(D_1) \times V(D_2) \times \dots \times V(D_n) = \{(w_1, w_2, \dots, w_n): w_i \in V(D_i), i = 1,2,\dots,n\}$ and a vertex $(u_1, u_2, \dots, u_n)$ dominates a vertex $(v_1, v_2, \dots, v_n)$ of D if and only if there exists an $r \in \{1,2,\dots,n\}$ such that $u_r v_r \in A(D_r)$ and $u_i = v_i$ for all $i \in \{1,2,\dots,n\} - \{r\}$.

Definition: 2.4 A crown graph $C_n \odot K_1$ in which the edges of the cycle are directed clockwise or anti-clockwise and the pendant edges are directed away from the cycle is called an ***outcrown*** and it is denoted as $o\overrightarrow{C_n \odot K_1}$.

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11. Dr. K. Palani – Geodetic Number of Soft Graphs of Certain Graphs

GEODETIC NUMBER OF SOFT GRAPHS OF CERTAIN GRAPHS

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Abstract: A subset S of vertices in a soft graph (F, A) is called a geodetic set if every vertex not in S lies on a shortest path between two vertices from S. The minimum cardinality of a geodetic set is the geodetic number of (F, A), and is denoted by g(F, A).In this paper, we discuss the geodetic number of a soft graph of some standard graphs.

Keywords: geodetic set, geodetic number, soft graph

1 Introduction

Soft set theory was introduced by Molodtsov[1] in 1999 as a general mathematical tool for dealing with uncertainties. Maji, Biswas and Roy [2] made a theoretical study of the soft set theory in more detail. In soft set theory, the problem of setting the membership function does not arise, which make the theory easily applied to many different fields. A new notion on soft graph using soft sets was introduced by Rajesh K. Thumbakara and Bobin George [4]. M.Akram and S.Nawaz[5] introduced the concept of soft graphs in broad spectrum.The soft graph has also been studied in more detail in some papers. We discussed soft graphs of some standard and special graphs in [6] and [7].The geodetic sets of a connected graph were introduced by Harary, Loukakis and Tsouros[8],as a tool for studying metric properties of connected graphs. Here we discuss the geodetic number of soft graphs for some standard graphs.

2 Preliminaries

Definition: 2.1 Let U be a universal set and E be the set of parameters related to the objects in U. Let $\mathcal{P}$(U) denote the power set of U. Let A be any non-empty subset of E. A pair (F, A) is called **soft set** over U, where F is a set-valued function given by F: A → $\mathcal{P}$(U). In other words, a **soft set** over U is a parameterized family of subsets of the universe U.

Definition: 2.2 [5] Let G^* = (V, E) be a simple graph and A be any nonempty set of parameters. Let subset R of A×V be an arbitrary relation from A to V. A mapping F: A → $\mathcal{P}(V)$ can be defined as F(x) ={y ∈ V/x R y} and a mapping K: A → $\mathcal{P}(E)$ can be defined as K(x) = {uv ∈ E/{u,v } ⊆ F(x)}.

A 4-tuple G = (G*, F, K, A) is called a **soft graph** of G if it satisfies the following properties:

(i) G*= (V, E) is a simple graph

(ii) A is a nonempty set of parameters

(iii) (F, A) is a soft set over V

(iv) (K, A) is a soft set over E

(v) (F(a), K(a)) is a sub graph of G* for all a ∈A

The sub graph (F(a), K(a)) is denoted by H(a)

A soft graph can also be represented by G = < F, K, A > = {H(x)/ x ∈A}

The set of all soft graphs of G* is denoted by SG(G*)

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12. Dr. D. Radha – The Algebraics Structurs of CM (2,2) Near Ring

THE ALGEBRAIC STRUCTURES OF CM (2,2) NEAR RING

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Abstract: In this paper we discuss some more results on CM (2,2) near ring and Strong CM (2,2) near ring. The properties of CM (2,2) near ring and Strong CM (2,2) near ring are discussed using the concepts of Zero symmetric, Boolean, Subcommutative and so on. We have proved some properties and characterization theorems under certain conditions. We have also characterized that any Anti-homomorphic image of a CM (2,2) near ring is a δ near ring. It is proved that every Subcommutative near ring is a Strong CM (2,2) near ring.

Keywords: Boolean, Commutative, P_k' near ring, S-near ring, Subcommutative, δ near ring.

1 Introduction

Near rings can be thought of as generalized rings: if in a ring we ignore the commutativity of addition and one distributive law, we get a near ring. Gunter Pilz "Near Rings" is an extensive collection of the work done in the area of near rings.

Throughout this paper N stands for a right near ring $(N,+,.)$ with atleast two elements and '0' denotes the identity element of the group $(N,+)$ and we write xy for $x.y$ for any two elements x, y of N. Obviously $0n = 0$ for all $n \in N$. If, in addition, $n0 = 0$ for all $n \in N$ then we say that N is zero symmetric. For any subset A of N, we denote A^* the set of all non-zero elements of A. In particular $N^* = N - \{0\}$

2 Preliminaries

Definition: 2.1 [11] A **right near ring** is a non-empty set N together with two binary operations "+" and "." such that (i) $(N,+)$ is a group (ii) $(N,.)$ is a semigroup (iii) $(n_1 + n_2)n_3 = n_1n_3 + n_2n_3$ for all $n_1, n_2, n_3 \in N$.

Definition: 2.2 [3] N is called an **S-near ring** or an **S'-near ring** according as $x \in Nx$ or $x \in xN$ for all $x \in N$.

Definition: 2.3 [5] A near ring N is **Boolean** if and only if for all $x \in N$: $x^2 = x$.

Definition: 2.4 [2] N is called a **P_k near ring (P_k' near ring)** if there exists a positive integer k such that $x^kN = xNx$ $(Nx^k = xNx)$ for all $x \in N$.

Definition: 2.5 [7] N is said to be **subcommutative** if $Na = aN$ for all $a \in N$.

Definition: 2.6 [4] Let $N, N' \in N$. Let $h: N \to N'$ is called a **near-ring homomorphism** if for all $m, n \in N$ (i) $h(m+n) = h(m) + h(n)$ (ii) $h(mn) = h(m)h(n)$.

Definition: 2.7 [4] Let N and N' be two near-rings. A function $f: N \to N'$ is called an **anti-homomorphism** if the following conditions are satisfied: (i) $f(n+m) = f(m) + f(n)$ (ii) $f(nm) = f(m)f(n)$, for all $n, m \in N$.

Definition: 2.8 [8] A near ring N is said to be a **CM (2,2) near ring** if for every $a \in N$, there exists $x \in N^*$ such that $axa = x^2a^2$.

Definition: 2.9 [8] A CM (2,2) near ring is said to be **Strong CM (2,2) near ring** if $aba = b^2a^2$ for all $a, b \in N$.

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13. Dr. D. Radha – On Some Substructures of Semicentral Seminear-Rings

ON SOME SUBSTRUCTURES OF SEMICENTRAL SEMINEAR-RINGS

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Abstract: The notion of semi-rings was introduced by the German Mathematician Dedekind (1964).Later, Wily G Van Hoorn and Van Rootselaar (1976) introduced the notion of seminear-rings which is a generalized semi-ring. In this paper, we made an extended study on semicentral seminear-rings. It is proved that left (right) semicentral seminear-ring, $S_l(R)$ ($Sr(R)$) is commuting if and only if it is central seminear-ring. Also, it is showed that a primitive semicentral seminear-ring is additive if and only if it is orthogonal. It is observed that in a left (right) semicentral seminear-ring, $S_l(R)$ ($S_r(R)$) which is commuting then the left (right) semicentral quotient seminear-ring, $S_l(R/N)$ ($S_r(R/N)$) is orthogonal if and only if left (right) semicentral seminear-ring , $S_l(R)$ ($S_r(R)$)is orthogonal. The same concept for primitive semicentralseminear-ring is also proved.

Keywords: Left (right) semicentral seminear-ring, left (right) primitive semicentral idempotent, orthogonal, commuting, additive.

1 Introduction

In a semiring (N,+,.) if we ignore commutativity of +, and one distributive law,(N,+,.) is called a seminear-ring. If we do not stipulate the left distributive law, (N,+,.) is called right seminear-ring. Wily G Van Hoorn and Van Rootselaar [21] introduced the notion of seminear-rings. Seminear-rings are the generalization of semi-ring and near-rings. Especially he discussed homomorphisms in semi-near rings and obtained some interesting properties. Further, mathematicians like Golan J, Javed Ahsan, Balakrishnan R, Perumal R worked in the field of seminear-rings and explored many interesting results. In 2018,we [16] introduced the notion of semicentral seminear-rings. In this paper, we discussed some more properties of orthogonal elements in semicentral seminear-rings.

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14. Dr. V. Mahalakshmi - Interval valued Fuzzy X-Subalgebra of Near-Subtraction Semigroups

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MATHS-325

INTERVAL VALUED FUZZY X-SUBALGEBRA OF NEAR-SUBTRACTION SEMIGROUPS

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The aim of this article is to study the notion of Interval valued fuzzy X-subalgebra of near-subtraction semigroups. We will investigate along with some fundamentals and their algebraic Properties.

***Keywords**: Fuzzy Sub algebra, Interval valued Fuzzy X-sub algebra, fuzzy X-subalgebra.*

I INTRODUCTION

The Theory of Fuzzy subsets, fuzzy logic found in the research area of L.A. Zadeh[14] .He made the extension of fuzzy and the notion of interval valued (i-v) fuzzy sets where the membership functions are closed intervals of numbers instead of single members. Fuzzy sets have many applications in several research areas.Young Bae Jun and Kyung Ho Kim[13] introduced the concept of i-v fuzzy right also left R-subgroups in near rings. Through this, we conceptualize interval valued fuzzy X-sub algebra in near-subtraction semigroup(IVFX-SA) and give investigate some of their properties.

2 PRELIMINARIES

This Section contains basic definitions.

Definition 2.1[10]

Consider X to be defined as a non empty along with the operations '-' and '•' is said to be a *right near-subtraction semigroups* if for p,q and r in X.

(i)With respect to '-' it defines as a subtraction algebra

(ii) With respect to '•' it defines as a semigroup

(iii)Right Distributive Law follows.

Definition2.2

A fuzzy set μ in *X* is said to be *fuzzy X-sub algebra* of *X* if for each p,q∈X

15. Dr. V. Mahalakshmi – Weak Prime-Fuzzy BI-Ideals Near-Subtraction Semigrops

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MATHS-326

WEAK PRIME ANTI-FUZZY BI-IDEALS IN NEAR-SUBTRACTION SEMIGROUPS

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Abstract— Different types of fuzzy bi-ideals in near-ring are explored and subjected to detailed studies in recent researching. In this direction, we, here, introduce a weak prime anti-fuzzy bi-ideals in near-subtraction semigroups and discuss some of its results.

Keywords— *Anti-fuzzy ideal, Anti-fuzzy bi-ideal, Anti-fuzzy prime ideal and Prime anti-fuzzy bi-ideal*

I.Introduction

In 2011, Nagaiah Thandu and Narasiman Swamy [9] initiated the concept of *anti-fuzzy prime ideals in near-subtraction semigroups*. Since then, Mumtha & Mahalakshmi [6] introduced the concept such as *anti-fuzzy prime ideals in near-subtraction semigroups*. Also, they discussed the concept of *prime anti-fuzzy bi-ideals in near-subtraction semigroups* [7]. In this paper, we introduce a new bi-ideal namely, weak prime anti-fuzzy bi-ideals in near-subtraction semigroups and characterize some of its properties.

Mathematics subject classification Code: 03E72 and 08A72

II. Preliminaries

Definition: 2.1

A *fuzzy subset* is the mapping μ from the non-empty set X into the unit interval [0,1].

Definition: 2.2

A fuzzy subset μ of X is called an *anti-fuzzy bi-ideal* of X if

(i). $\mu(x-y) \le \max\{\mu(x), \mu(y)\}$

(ii). $\mu(xyz) \le \max\{\mu(x), \mu(z)\}, \ \forall\, x, y, z \in X.$

Definition: 2.3

Let μ and λ be any two fuzzy subsets of X. Then their anti-product $\mu.\lambda$ is defined by,

$$(\mu.\lambda)(x) = \begin{cases} \inf_{x=yz} \{\max\{\mu(y), \lambda(z)\}\} & \text{if } x = yz \\ 0 & \text{otherwise} \end{cases}$$

Definition: 2.4

For any fuzzy subset μ in X and t ∈ [0,1]. We define an *lower t-level cut* of μ is defined by, $L(\mu; t) = \{x / x \in X, \mu(x) \le t\}$, which is also called an *anti-level cut* of μ.

Definition: 2.5

Let I be a subset of X. Define an *anti- characteristic function* $\chi_{A^c} : A \to [0,1]$ by,

$$\chi_{A^c}(x) = \begin{cases} 0 & \text{if } x \in A \\ 1 & \text{otherwise} \end{cases}, \text{for every } x \in X.$$

Definition: 2.6

A weak anti-fuzzy bi-ideal μ of X is said to be *normal* if there exists $a \in X$ such that $\mu(a) =$ 1.

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16. M. Sivagama Sundari and Dr. V. Sornalakshmi - Assessment of Phytochemical Screening and in Vitro Antiinflammatory Activity in Mangrove Associated Suaeda Maritima (l.) Dumort of Tuticorin Coast

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ASSESSMENT OF PHYTOCHEMICAL SCREENING AND *IN VITRO* ANTIINFLAMMATORY ACTIVITY IN MANGROVE ASSOCIATED *SUAEDA MARITIMA* (L.) DUMORT OF TUTICORIN COAST

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ABSTRACT

Suaeda maritima (L.) Dumort is an herbaceous mangrove associated plant widely distributedon the landward margin of Gulf of Mannar Biosphere Reserve, Tuticorin coast. The present study was carried out to evaluate the phytochemical screening and antiinflammatory activity of *Suaeda maritima* (SMA). The phytochemical analysis of methanol and ethanol extracts of SMA revealed the presence of flavonoids, phenols, saponins, steroids, tannins, terpenoids, sugar, glycosides and xanthoprotein. The antiinflammatory activity of ethanol extracts of SMA was evaluated using five *in vitro* based assays: protein denaturation inhibition, proteinase inhibitory action, heat reduced haemolysis, hypotonicity induced haemolysis and lipoxygenase inhibition. Ten different concentrations of SMA ethanol extract and standard aspirin (100, 200, 300, 400, 500, 600, 700, 800, 900 and 1000 µg/ml) were used in these studies. Antiinflammatory activity was observed in dose dependent manner. In protein denaturation at concentration of 1000 µg/ml extract showed maximum protection 80.30% and standard drug provided 90.90% protection. The ethanol extract of SMA showed significant ($P<0.01$) inhibition of (82.34%) proteinase inhibitory action at the concentration of 1000µg/ml. Similarly, in membrane stabilization test (heat induced haemolysis and hypotonicity induced

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17. Dr. V. Sornalakshmi - Phytochemical Analysis, Ftir Study And Invitro Antioxidant Activity Of Marine Brown Algae Turbinariaconoides (J.Agardh) Kutzing

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PHYTOCHEMICAL ANALYSIS, FTIR STUDY AND *INVITRO* ANTIOXIDANT ACTIVITY OF MARINE BROWN ALGAE *TURBINARIACONOIDES*(J.AGARDH)KUTZING

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ABSTRACT

The brown marine macro alga *Turbinaria conoides* was investigated for phytochemical analysis, FTIR study and antioxidative activities. Antioxidant activity was studied using different solvent extractssuch as petroleum ether, benzene, chloroform, ethyl acetate, methanol and ethanol. It was evaluated by different assays viz; DPPH, hydroxyl, superoxide, ABTS and reducing power. Fourier Transform Infrared Spectroscopy (FTIR) study was performed to find the functional group present in the seaweed. Higher DPPH (125.31% and IC_{50}26.54 µg/ml) and Hydroxyl (116.15% and IC_{50}22.56µg/ml) radical-scavenging activity was recorded by ethyl acetate extract whereas methanol extract showed good superoxide radical scavenging activity (136.87% and IC_{50}23.98µg/ml). Maximum ABTS radical scavenging activity (126.06% and IC_{50}22.56 µg/ml) was recorded for ethanol extract. The reducing power of the sample was in the following order: methanol> ethanol>ascorbic acid>petroleum ether>ethyl acetate>chloroform >benzene.*T. conoides* extracts could be considered as natural source of antioxidants and may be useful for curing diseases arising from oxidative deterioration.

Key words: Seaweed, *Turbinaria*, Antioxidant, FTIR

18. Dr. V. Maheswari - Connected Paired Domination on Anti Fuzzy Graph

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Connected Paired Domination on Anti Fuzzy Graph

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Abstract

In this paper, we define the notion of connected paired domination on anti fuzzy graph. Also, we determine the connected paired domination number for some standard anti fuzzy graphs and prove some of their properties.

Keywords

Anti Fuzzy graph, Domination, Paired Domination, Connected Paired Domination.

AMS Subject Classification: 05C72

Introduction:

The connected dominating set plays a vital role in networks and health informatics. The study of dominating sets in graphs was started by Ore and Berge in 1962. E.Sampathkumar and H.B.Walikar defined the dominating set to be connected dominating set if the induced subgraph of D is connected. A.Somasundaram and S.Somasundaram discussed domination in a fuzzy graph using strong edges. R.Seethalakshmi and R.B.Gnanajothi[8] introduced the definition of Anti Fuzzy Graph. R.Muthuraj and A.Sasirekha[5,6] developed the concept on anti fuzzy graph and also introduced the domination on anti fuzzy graph. Paired domination was introduced by T.Haynes and P.Slater. In this paper, we define the notion of connected paired domination on anti fuzzy graph. Also, we determine the connected paired domination number for some standard anti fuzzy graphs and prove some of their properties.

1. Preliminaries:

Definition 1.1: An anti fuzzy graph $\mathcal{A} = (\sigma, \mu)$ is a pair of functions σ:V→[0,1] and $\mu: V \times V \to [0, 1]$ with μ(u,v) ≥ σ(u) Vσ(v) for all u,v in V where V is a finite non empty set and V denotes maximum.

Definition 1.2: If the underlying graph $\mathcal{A}^*$ is complete and $\mu(a, b) = \sigma(a) \vee \sigma(b)$ for every (a, b) in E then the anti fuzzy graph $\mathcal{A}$ is called the complete anti fuzzy graph.

Definition 1.3: If every vertices and edges in an anti fuzzy graph $\mathcal{A}$ have same membership value then $\mathcal{A}$ is called uninodalanti fuzzy graph.

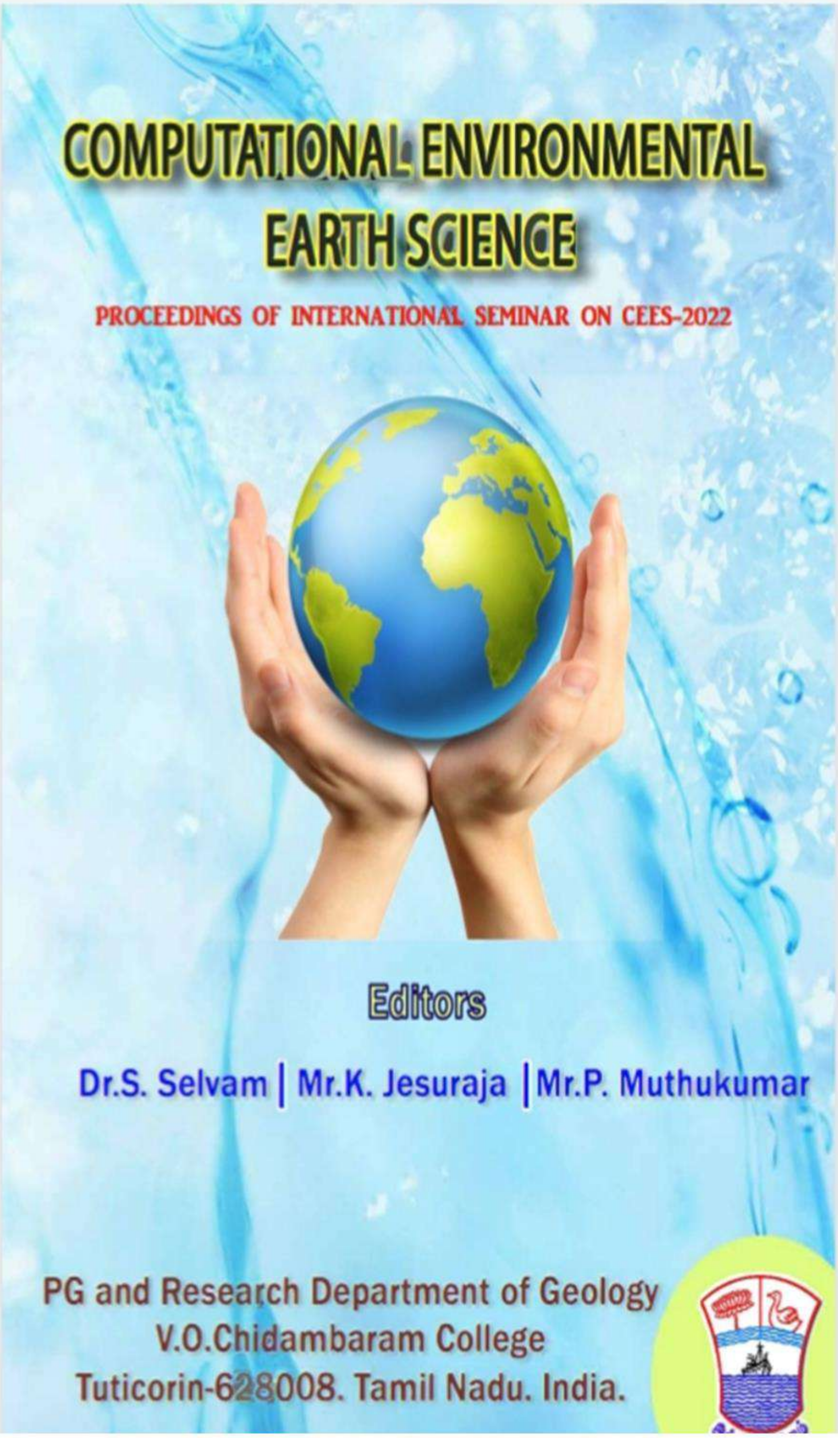
Definition 1.4: If for every vertex $b \in V(\mathcal{A}) \setminus D$ then there exists a in D such that a is a strong neighborhood of b otherwise it dominates itself. Then the set D ⊆V($\mathcal{A}$) is said to be a dominating set of an anti fuzzy graph $\mathcal{A}$. Among all minimal dominating set in $\mathcal{A}$ the maximum fuzzy cardinality is called a dominationnumber of an anti fuzzy graph$\mathcal{A}$. It is denoted by $\gamma_{\mathcal{A}}$.

Definition 1.5: A paired dominating set of an anti fuzzy graph $\mathcal{A}$ is a dominating set D_{pd} of an anti fuzzy graph and the subgraph induced by D_{pd} contains perfect matching. The maximum fuzzy cardinality is taken over the minimal paired dominating set in $\mathcal{A}$ is called the paired domination number of an anti fuzzygraph $\mathcal{A}$. It is denoted by $\gamma_{pd}(\mathcal{A})$.

2. Main Results:

Definition 2.1: A connected paired dominating set of an anti fuzzy graph $\mathcal{A}$ is a dominating set D_{cpd}. Also, the subgraph induced by D_{cpd} is connected and contains perfect matching. The maximum fuzzy cardinality is taken over the minimal connected paired dominating set in $\mathcal{A}$ is called the connected paired domination number of an anti fuzzygraph $\mathcal{A}$. It is denoted by $\gamma_{cpd}(\mathcal{A})$.

Dr.P. Gurulakshmi-Photocatalytic Degradation of Methylene Blue Using Trimetal / Chitosan Composites



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Photocatalytic Degradation Of Methylene Blue In Sunlight Using Trimetal/ Chitosan Nanocomposites

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Abstract

Developing an economic and highly efficient photocatalyst has been the target of research in sustainable remediation techniques. Decorating photocatalysts with nanoparticles regularly increases the catalysts' photocatalytic activity. This work aims to synthesize trimetal/chitosan nanocomposites using a simple method with low production cost, to be applied in sunlight for photocatalytic degradation of Methylene blue dye. La/Bi/Cu/Chitosan nanocomposites were successfully synthesized using chemical reduction method. The as-prepared La/Bi/Cu/Chitosan nanocomposites exhibited a moderate specific surface area and possessed broad range of absorption in the UV-Visible spectra. XRD, UV-Vis and TEM measurements were used to characterize the nanocomposites. The photocatalytic activity was evaluated by the degradation of methylene blue in sunlight.

Keywords: *Chitosan, Nanocomposites, Methylene blue, Photocatalyst*

Introduction

The term pollution refers to the contamination of air, water, or soil with one or more materials that reduces the ability of the environment to support the original ecosystem or to meet some human needs . It is generally known in this context that water contamination is a serious problem. Some dyes, particularly those used in the textile industry, have high resistance to microbiological degradation, and some of them have carcinogenic and mutagenic qualities, which are proved to pose severe health risks for humans and all other living species [1, 2]. One of the most widely used dyes, Methylene Blue (MB) is a heterocyclic organic molecule used in industries, medicine, and chemical activities. Its chemical structure contains a sulfonic group and N=N bonds. Contamination of water with MB has catastrophic consequences. Blindness, respiratory illnesses, and digestive diseases are just a few of the health issues that people face.