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NEUTROSOPHIC GENERALIZED SEMI ALPHA STAR CLOSED SETS IN NEUTROSOPHIC TOPOLOGICAL SPACES

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Abstract

The aim of this paper is to introduce a new concept of Neutrosophic closed sets namely Neutrosophic generalized semi alpha star closed sets (Neutrosophic $gs\alpha^* -$ closed sets) in Neutrosophic topological spaces. Properties and characterizations of Neutrosophic generalized semi alpha star closed sets are derived and compared with already existing sets.

Keywords: $N_{eu}gs\alpha^*$ −closed sets , $N_{eu}gs\alpha^*$ −open sets , $N_{eu}gs\alpha^*$ −interior , $N_{eu}gs\alpha^*$ − closure.

抽象的

本文的目的是在中智拓扑空间中引入一个新的中智闭集概念，即中智广义半阿尔法星闭集（Neutrosophic gsα^*-闭集）。导出了中智广义半阿尔法星封闭集的性质和特征，并与现有的集进行了比较。

关键词：N_eu gsα^*-闭集，N_eu gsα^*-开集，N_eu gsα^*-内部，N_eu gsα^*-闭包。

I. INTRODUCTION

The term "neutrosophic" etymologically comes from "neutrosophy" which means knowledge of neutral thought . F.Smarandache[6] first introduced the concept of Neutrosophic set theory and it is based on intuitionistic fuzzy sets by K.Atanassov's[2] and also based on fuzzy sets by L.A.Zadeh's[15] . It includes three components , truth , indeterminancy and false membership function . The real life application of neutrosophic topology is applied in Information Systems , Applied Mathematics etc . R.Dhavaseelan and S.Jafari[4] has discussed about the concept of generalized neutrosophic closed sets .

In this paper, we introduce some new concepts in neutrosophic topological spaces such as Neutrosophic $gs\alpha^*$ −closed sets and Neutrosophic $gs\alpha^*$ −open sets. We also studied the relationship between Neutrosophic β −closed set , Neutrosophic α −closed set, Neutrosophic pre-closed set, Neutrosophic semi-closed set, Neutrosophic generalized Closed set,etc.

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Anti-diabetic, Anti-oxidant, Fluorescence and Filter Characterizations of Bis Glycine Lithium Bromide Monohydrate (BGLBMH) Macro and Nano-scaled Crystals

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ABSTRACT

Introduction: Crystals are meant for versatile applications and utility in all fields and mainly in electronic and biofields.

Aim: Our aim, the present investigation is focused on Bis Glycine Lithium Bromide Monohydrate (BGLBMH crystals), its synthesis and the various characterizations.

Methodology: BGLBMH Macro crystals are put in order by slow evaporation solution growth method and nanocrystal by milling method. The Single-crystal XRD, Powder XRD analysis, filter, anti-diabetic and anti-oxidant (AD and AO) studies were performed here.

Result: The single-crystal XRD study reveals the macro-crystalline lattice parameters with a, b, c in Å as 7.5397, 17.4174, 8.2727 and β as 118.14o as the system is monoclinic with a space group of P21/c. The macro and nano scales are analyzed for fluorescence spectral activity. The crystals speciality is THG and shows the SHG NLO value of 1.25 times that of KDP because of the strongest H bonds and the bandgap is 3.08 eV which is 403 nm as emission FL value for macro scaling and 397 nm for nano scaling with a bandgap of 3.12 eV. The nano outline of BGLBMH crystals is 250 nm and 34 nm correspondingly for the initial and final one.

Conclusion: The BGLBMH have good scope for anti-diabetic by the Glycine, bromide presence and have increased in inhibition as concentration increases and the IC value as 37.5 for macro and in a nano form, it is 30.4. Also, the AD - nm variations will have good efficiency when the size of the sample decreases from 250 to 34 nm. The BGLBMH macro and nanocrystals are used in filter applications also as the data are represented and concluded with the inferences and reported with the utilities for electronic and pharma utilities.

Key Words: AD, AO, Crystals, Fluorescence, Influx, Nano

INTRODUCTION

Complexes of glycine have recently attracted attraction due to their potential applications in ferroelectricity,[1-3] dielectric properties[4] and nonlinear optical properties.[5-9] Nonlinear optical materials[10-14] are very important for the current researchers due to their importance for producing the second and third harmonic generations.[15-17] Single-crystal X-ray beam structure arrangement examination uncovers that the hydrated type of glycine lithium bromide takes shape in the monoclinic framework, with spacegroup $P2_1/c$. Fluorescence, filter utility and AD and AO work for BGLBMH macro and nano scalings.[18-22].

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Growth, characterizations, and the structural elucidation of diethyl-2-(3-oxoiso-1,3-dihydrobenzofuran-1-ylidene)malonate crystalline specimen for dielectric and electronic filters, thermal, optical, mechanical, and biomedical applications using conventional experimental and theoretical practices

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ABSTRACT

The single crystals of diethyl-2-(3-oxoiso-1,3-dihydrobenzofuran-1-ylidene) malonate (D23DYM) were grown successfully and efficiently by the standard slow evaporation method. The lattice cell parameters by XRD analysis also confirmed that the crystal system is Triclinic with the space group of Pī. The FTIR spectrum portrays the presence of major and active functional groups in D23DYM. The thermal studies explained the two major weight losses between 107 and 153 °C and 153 and 800 °C for D23DYM have been observed. It is very clear that the hardness profile of D23DYM increases with increase in load which

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RESEARCH ARTICLE

Screening and Evaluation of Biodegradability of Polythene by Soil Bacteria

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ABSTRACT

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J Mater Sci: Mater Electron

Synthesis, growth, XRD, NLO, CHNSO, structure by theoretical approach, dielectric, absorbance, photoconductivity and bio studies of 4-(4-Acetyl-5-Methyl-1H-1, 2, 3-Triazol-1-yl) Benzonitrile crystals for optical, opto-electronic, and photonics utilities

J. Maalmarugan[1], V. Yokeswaran[2], R. Divya[3,*], H. Ganesan[4], R. P. Patel[5], G. Flora[6], K. SenthilKannan[7,*], K. Murugananthan[8], B. Vijayalakshmi[9], M. Hari sumithkumar[9], J. Janci Arockia Rani[10], and M. Meena[3]

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ABSTRACT

4-(4-Acetyl-5-Methyl-1H-1, 2, 3-Triazol-1-yl) Benzonitrile—AMHTYB crystal is effectively synthesized and grown successfully by slow-evaporation technique. The grown sample is monoclinic in nature which is identified by single-crystal XRD data analysis and its chemical formula is identified to be $C_{12}H_{10}N_4O$. From the NLO study, the titled crystal is found to be 1.24 times than that of the crystal of KDP for NLO-SHG efficiency and is good for the optical applications. The AMHTYB crystal is subjected to dielectric and photoconductivity study, the synthesized crystal is a -ve photoconductive type of material and is of good material for electronic industry based on its effect on dielectrics. The absorbance cut-off is identified by UV–visible spectrum as 291 nm and the energy gap as 4.27 eV by Tauc's plot for photonic effectiveness; the elemental calculations by CHNSO and by theoretical manner and the structural revelation by

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Synthesis, growth, XRD, NLO, CHNSO, structure by theoretical approach, dielectric, absorbance, photoconductivity and bio studies of 4-(4-Acetyl-5-Methyl-1H-1, 2, 3-Triazol-1-yl) Benzonitrile crystals for optical, opto-electronic, and photonics utilities

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ABSTRACT

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ABSTRACT

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Anti-diabetic, Anti-oxidant, Fluorescence and Filter Characterizations of Bis Glycine Lithium Bromide Monohydrate (BGLBMH) Macro and Nano-scaled Crystals

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ABSTRACT

Introduction: Crystals are meant for versatile applications and utility in all fields and mainly in electronic and biofields.

Aim: Our aim, the present investigation is focused on Bis Glycine Lithium Bromide Monohydrate (BGLBMH crystals), its synthesis and the various characterizations.

Methodology: BGLBMH Macro crystals are put in order by slow evaporation solution growth method and nanocrystal by milling method. The Single-crystal XRD, Powder XRD analysis, filter, anti-diabetic and anti-oxidant (AD and AO) studies were performed here.

Result: The single-crystal XRD study reveals the macro-crystalline lattice parameters with a, b, c in Å as 7.5397, 17.4174, 8.2727 and β as 118.14o as the system is monoclinic with a space group of P21/c. The macro and nano scales are analyzed for fluorescence spectral activity. The crystals speciality is THG and shows the SHG NLO value of 1.25 times that of KDP because of the strongest H bonds and the bandgap is 3.08 eV which is 403 nm as emission FL value for macro scaling and 397 nm for nano scaling with a bandgap of 3.12 eV. The nano outline of BGLBMH crystals is 250 nm and 34 nm correspondingly for the initial and final one.

Conclusion: The BGLBMH have good scope for anti-diabetic by the Glycine, bromide presence and have increased in inhibition as concentration increases and the IC value as 37.5 for macro and in a nano form, it is 30.4. Also, the AD - nm variations will have good efficiency when the size of the sample decreases from 250 to 34 nm. The BGLBMH macro and nanocrystals are used in filter applications also as the data are represented and concluded with the inferences and reported with the utilities for electronic and pharma utilities.

Key Words: AD, AO, Crystals, Fluorescence, Influx, Nano

INTRODUCTION

Complexes of glycine have recently attracted attraction due to their potential applications in ferroelectricity,[1-3] dielectric properties[4] and nonlinear optical properties.[5-9] Nonlinear optical materials[10-14] are very important for the current researchers due to their importance for producing the second and third harmonic generations.[15-17] Single-crystal X-ray beam structure arrangement examination uncovers that the hydrated type of glycine lithium bromide takes shape in the monoclinic framework, with spacegroup $P2_1/c$. Fluorescence, filter utility and AD and AO work for BGLBMH macro and nano scalings.[18-22].

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RESEARCH ARTICLE

Screening and Evaluation of Biodegradability of Polythene by Soil Bacteria

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Growth, characterizations, and the structural elucidation of diethyl-2-(3-oxoiso-1,3-dihydrobenzofuran-1-ylidene)malonate crystalline specimen for dielectric and electronic filters, thermal, optical, mechanical, and biomedical applications using conventional experimental and theoretical practices

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ABSTRACT

The single crystals of diethyl-2-(3-oxoiso-1,3-dihydrobenzofuran-1-ylidene) malonate (D23DYM) were grown successfully and efficiently by the standard slow evaporation method. The lattice cell parameters by XRD analysis also confirmed that the crystal system is Triclinic with the space group of Pī. The FTIR spectrum portrays the presence of major and active functional groups in D23DYM. The thermal studies explained the two major weight losses between 107 and 153 °C and 153 and 800 °C for D23DYM have been observed. It is very clear that the hardness profile of D23DYM increases with increase in load which

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Seasonal Variation of Heavy Metals in the Intertidal Gastropod *Trochus radiatus* of Gulf of Mannar

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Abstract

Heavy metals are considered to be the most common environmental pollutants in waters and biota; that indicate presence of effluents associated with industrial and domestic sources. The present study aimed to evaluate the trace metal accumulation (Fe, Mn, Zn, Cu, Cd, Pd and Ni) in the tissue of radiate top shell, the sediment and water samples collected from the Hare Island, Tuticorin, during May 2015 to April 2016. During the study, the metal accumulation in the Water, Sediment and Tissue were in the order of Zn > Pb > Cu > Cd; Fe > Mn > Zn > Cu > Cd; Fe > Zn > Mn > Cu > Cd > Pb > Ni respectively. The concentration of Fe dominated in the sediment and tissue sample throughout the study period. Elevated levels of trace metals especially Fe, Mn, Cu, Pb and Zn was observed during October to December, *i.e.*, during the northeast monsoon in all the samples. One way ANOVA indicated statistically no significant difference ($p > 0.01$) in the variation of Fe, Mn and Ni within the samples.

Keywords

Heavy Metal, *Trochus radiatus*, Accumulation, Sediment, Tissue

1. Introduction

The Ocean and coastal waters constitute a variety of human activities that primarily includes fisheries, agriculture, navigation, oil and mineral exploration and waste disposal [1]. Due to easy accessibility and subsequently high human intru-

Research Article

Anticancer Activity of *Turbo brunneus*, *Cypraea annulus* and *Babylonia spirata* on MCF-7 Cell Line

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Submission Date: 22-02-2021; Revision Date: 29-03-2021; Accepted Date: 14-04-2021

ABSTRACT

Natural products have served as an important source of drugs since ancient times. Marine natural products isolated from molluscs have been tested for an extensive range of biological activities. Marine compounds are known to have a serious potential as anticancer drugs. The present study aims to assess the anticancer activity of three marine gastropods *Turbo brunneus*, *Cypraea annulus* and *Babylonia spirata*. The cytotoxic effects of experimental organisms were performed using MTT assay on MCF-7 cell line. The percentage of cell viability was found to be decreased with increasing concentration of the samples. The results of the present study revealed that *T. brunneus*, *C. annulus* and *B. spirata* showed potent cytotoxic activities against MCF-7 cell lines with IC_{50} values of 135.590 µg/ml, 412.2 µg/ml and 222.918 µg/ml respectively.

Key words: *T. brunneus*, *C. annulus*, *B. spirata*, Cytotoxicity assay, MCF-7 cell line.

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INTRODUCTION

Cancer is a class of disease characterized by out-of-controlled cell growth. A report released by WHO has projected the cancer related deaths to about 12 million by 2030, while American Cancer Society has projected 27 million new cancer cases leading to 17.5 million deaths by 2050.[1] Although cancer accounts for around 13% of all death in the world, more than 30% cancer deaths can be prevented by modifying or avoiding key risk factors.[2] Use of chemicals through tobacco and alcohol, unhealthy food habits, physical inactivity, harmful radiations are some of the causes of the disease. The incidence of breast cancer has been increasing worldwide for many decades with asian countries attaining highest incidence rate.[3] In recent years, marine natural bioprospecting has yielded a considerable number of drug candidates. Research into the ecology of marine natural products has shown that many of these compounds have anticancer function.[4] Therefore, investigations for finding new anticancer compounds are imperative and interesting. After taking into consideration the immense side effects of synthetic anticancer drugs, many researchers are making concerted efforts to find new and natural anticancer compounds. The problems of systematic toxicity and drug resistance in cancer chemotherapy urge the continuing discovery of new anticancer agents. However, almost all chemotherapeutic drugs currently in the market cause serious side effects. Natural products and their derivatives represent more than 50% of all the drugs in clinical use of the world. Almost 60% of drugs approved for cancer treatment are of natural origin.[5] Although marine compounds are underrepresented in current pharmacopoeia, it is anticipated that the marine environment will become an invaluable source of novel compounds in the future.[6] Molluscs represent an important and highly diverse group of animals. Many species are of particular interest to humans as food and medicine. Marine organisms are rich source of bioactive compounds with remarkable impact in the field of pharmaceutical, industrial and biotechnological product developments. In this scenario there is much scope for future drug discovery within this phylum, exploring novel compounds with newer mode of action. Hence an

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RESEARCH ARTICLE

DETERMINATION OF GENETIC DIVERSITY IN *PORTUNUS PELAGICUS* (LINNAEUS, 1758) COLLECTED FROM GULF OF MANNAR

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Abstract

In the present study, the marine crab *Portunuspelagicus* was screened with 17 primers and made to score polymorphism. The main emphasis of the present study was to assess the genetic diversity at intra specific level among the 3 accessions of *P. pelagicus* species of Gulf of Mannarusing RAPD markers. RAPD analysis shows that there is a high level of polymorphism among different accessions. From this study, it was understood that each location varied with respect to environmental factors and genetic parameters. The OPB-18, OPB-19, OPC-07 and OPN-06 primers produced distinct, highly reproducible amplification profile for all the screened samples. In the present study, amplification bands ranged between 250 and 663 bp. Maximum numbers of bands were produced by OPN-06 and least by OPB-19. Moderate to high genetic diversity was observed in all geographic samples of *P. pelagicus* from RAPD analysis. RAPD analysis from three different geographical regions shows clear polymorphic patterns. Thoothukudi and Rameshwaram populations appear in one cluster, while the Kanyakumari populations formed the other cluster indicating a genetic variability and diversity in samples collected from different places.

Introduction:-

Genetic diversity refers to the variation of genes within species. This constitutes distinct population of the same species or genetic variation within population or varieties within a species. Genetic diversity resides in the variation in the sequences of four base pairs, such as components of nucleic acids which constitute the genetic code. Other kinds of genetic diversity can be identified at various levels of organizations, including the amount of DNA present, chromosome structure and number. New genetic variations arise in individuals by gene and chromosomal mutations, and in organisms with sexual reproductions, these variations are spread through the population by recombination [1]. Genetic diversity deals with the genetic characteristics of the organisms that play a major role in the survival and adaptability of the species [2].

The ability of organisms to challenge the adaptability to their changing environment leads to its survival and causes rise in genetic variation [3]. Genetic variations can be determined based on morphological, molecular and biochemical types of information [4,5&6]. Genetic variation in fishes has proved to be valuable in fisheries and aquaculture management for identification of stocks, and in selective breeding programmes. Individuals with larger genetic variability have higher developmental stability, growth rates, fecundity, viability, and resistance to

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RESEARCH ARTICLE

DETERMINATION OF GENETIC DIVERSITY IN *PORTUNUS PELAGICUS* (LINNAEUS, 1758) COLLECTED FROM GULF OF MANNAR

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Eco-friendly synthesis and characterization of cobalt oxide nanoparticles by sativum species and its photo-catalytic activity

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Cobalt oxide nanoparticles (Co_3O_4-C and Co_3O_4-A)
Sativum species
Dye degradation

ABSTRACT

Coriandrum sativum and *Allium sativum*are belong to family alliaceae which is famous for its culinary and medicinal properties. These two sativum species' seeds and cloves extracts are chosen to synthesize the cobalt oxide nanoparticles because it is eco- benign, secure as well as cost – effective method. The reducing sugar such as glucose which is present naturally in the extract used as reducing agent instead a harmful chemicals as reducing agent. The synthesized cobalt oxide nanoparticles using sativum species were characterization using UV–Visible spectroscopy, FT-IR spectroscopy, EDAX and SEM. The optical absorption spectrum for Co_3O_4 nanoparticles are studied using UV–Visible spectroscopy. The FT-IR spectrum confirms the presence of functional group in cobalt oxide nanoparticles. Scanning Electron Microscopy was employed to analyze the morphology, it shows that synthesized cobalt oxide nanoparticles show different morphology, which depends on the nature of the extract and of the compound present the extract. The EDAX studies show that the presence of cobalt and oxygen elements in the synthesized nanoparticles. Photo - catalytic activity of the synthesized nanoparticles was evaluated by degradation of Rhodamine B dye.

Selection and peer-review under responsibility of the scientific committee of the International Conference On Impact Of Innovations In Science And Technology For Societal Development: Materials Science.

1. Introduction

Green synthesis of nanoparticles makes use of environmental friendly non-toxic and safe reagents. Ecological synthesis techniques use moderately pollutant-free chemicals for synthesis nanomaterials and embrace the use of being solvent like water, natural extracts. This principle focuses on choosing reagent that façade the least risk and generate only benevolent by products. Though physical and chemical methods are trendier for nanoparticles synthesis, the biogenic fabrication is a better choice due to eco-friendliness [1,2].

The utilization of oxide nanoparticles has received much attention due to their unique properties, such as extremely smaller size, high surface area-to-volume ratio, surface modifiability, excellent magnetic properties and bio compatibility hence, the production of nanoparticles should be economically visible, environmentally sustainable and well accepted by society [3].

Cobalt oxide nanoparticles appear white in colour and are magnetic p-type semiconductors. The particle will convert into cobalt metal upon heat into 900 °C. In the search for electrical materials and batteries, cobalt oxide nanoparticles generally refer to Nanoscale cobalt (II, III) Co_3O_4 oxide particles with various shapes and crystals the structures. Several physical and chemical methods have been reported for the synthesis of cobalt oxide nanoparticles including, microwave-assisted [4], hydrothermal method [5], sol–gel techniques [6], and solution combustion method [7]. Cobalt oxide nanoparticles have potential applications in lithium-ion batteries [8,9] and electronic gas sensors [10,11].

The effects of quantum confinement and surface effects and variable oxidation state of cobalt have made Co_3O_4nanoparticles find immense applications in areas such as catalysis, intercalation compounds for energy storage in Li-ion batteries, gas sensors, elec-

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FUZZY *s*-DOMINATING ENERGY

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Abstract

The energy of a graph is defined as the sum of the absolute values of eigenvalues of its adjacency matrix. The absolute value of the largest eigenvalue is called the spectral radius of the graph. This article introduces *s*-dominating energy in simple connected crisp graphs and extends the same to connected fuzzy graphs. Also *s*-dominating energy of a complete fuzzy graph is determined and bounds on fuzzy *s*-dominating energy are acquired.

1. Introduction

Eigenvalues and Eigen vectors of matrices have huge real life applications. Steiner domination number in crisp graphs has been studied from [7]. Also domination in fuzzy graphs was studied from [2]. The close relation between eigenvalues of dominating matrix and dominating energy are expounded in [3], [4] and [5]. The different types of energies of fuzzy graphs are explicated in [1] and [8]. These studies lead us to introduce Steiner dominating energy (i.e.) *s*-dominating energy in crisp graphs and is then extended to fuzzy graphs.

2010 Mathematics Subject Classification: 05C72, 05C69, 51E10.

Keywords: fuzzy *s*-dominating matrix, fuzzy *s*-dominating eigen values, fuzzy *s*-dominating spectrum.

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Fall Detection in Elderly Care System Based on Group of Pictures

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Fall detection is a serious problem in elder people. Constant inspection is important for this fall identification. Currently, numerous methods associated with fall detection are a significant area of research for safety purposes and for the healthcare industries. The objective of this paper is to identify elderly falls. The proposed method introduces keyframe based fall detection in elderly care system. Experiments were conducted on University of Rzeszow (UR) Fall Detection dataset, Fall Detection Dataset and MultiCam dataset. It is substantially proved that the proposed method achieves higher accuracy rate of 99%, 98.15% and 99% for UR Fall detection dataset, Fall Detection Dataset and MultiCam dataset, respectively. The performance of the proposed method is compared with other methods and proved to have higher accuracy rate than those methods.

Keywords: Optical flow; group of pictures; foreground segmentation.

MSC 2000: 98U10, 54H30, 68U07.

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SYSTEMATIC MAINTENANCE OF BLOCK CHAIN ENABLED INTELLIGENT HEALTHCARE MONITORING SCHEME USING INTERNET OF THINGS

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Liaison Between The Services Provided By Banking Sector And Customer Satisfaction

Dr.A.J.Excelce, Dr.T.Priyanka, Ms.A.Amora,

Abstract

In Today's World Banking Plays A Vital Role. Even A Common Man Is Now Aware Of All The Banking Transaction. Banking, Before 5 To 6 Years Was A Little Tedious And Now It Has Been Become Much Flexible. Now Totally The Situation Has Been Changed No Long Queue, Lengthy Statements, No Pen And Paper For Withdrawal And Deposits And So On. All The Facilities Have Been Clubbed Together And Are Given To The Customer Within Their Hands. Therefore In This Study 187 Respondents Were Selected To Analyze The Customer Satisfaction And The Service Quality In Private And Public Sector Banks And Also To Create Awareness Among The Customers Among Banking Facilities.

How to Cite

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Section

International Journal of Modern Agriculture

Food Safety Challenges And Responsibilities Faced By Leaders Of Family – A Study With Reference To Mothers Of Infant

Dr.A.J.Excelce, Dr. T.Priyanka, Ms.A.Amora, Ms.X.Sebastini Silva

Abstract

In today's world, children constitute a major proportion of the global population and they are the one who are easily affected by food borne diseases because of their weak immune system. It has been reported that 10% of the 5.8 million people living in the world are children less than 5 years of age, and among them annually 1.8 million children die from the direct effects of diarrhoeal diseases. (World Health Organisation, 1998)[4]. The potential risk factors leading to diarrhoea in an infant are, feeding leftover and overnight foods, not washing hands prior to cooking and feeding, consumption of the spilled food on the floor, use of dirty cloth for wiping hands and utensils and the use of unsterilized and dirty feeding bottles for the infants (Sheth, M., &Arora, S., 2001)[2]. Poor environmental sanitation and poor personal hygiene of the caretaker and mothers also continue to remain leading etiological factors for food borne diseases among infants (Mini Sheth & Reeta Dwivedi, 2006)[3].

An Assortment of Literature Review: E Learning during Covid – 19

PDF (https://www.tojqi.net/index.php/journal/article/view/3171/2138)

Dr.T. Priyanka, Dr.A.J. Excelce, Mrs.C. Shilpa Rao,Ms.A. Amora, Dr.T. SangeethaSudha,

Abstract

Covid 19 has affected different people in different ways. It has changed totally everyone's lives globally, almost all the section of people and people belonging to different sector of work has lost their living and also they are forced to move on to digital platform to run their routine work. All the sectors started working in online mode, especially the educational system. Teachers, students and parents all played a vital role in this digital learning. Therefore this paper inscription was to gather all the literature review related to e learning, that is to share the knowledge and ideas of different authors view about e learning.

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Section

Articles

Liaison Between The Services Provided By Banking Sector And Customer Satisfaction

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Articles

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FABRICATION OF ZNS THIN FILMS BY NEBULIZER SPRAY PYROLYSIS TECHNIQUE FOR SOLAR CELL APPLICATIONS

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ABSTRACT

In the present work, Zinc Sulphide was prepared by nebulizer spray pyrolysis technique on glass substrates at varying deposition temperatures. For Zinc Sulphide thin films the temperature was optimized to be 350°C. The structural, morphological, optical and electrical properties of the as deposited ZnS thin films were studied for solar cell application and the results are discussed.

Key words: Spray Pyrolysis, ZnS, XRD, SEM, EDAX, AFM, UV-VIS.

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Synthesis of metal oxide nanoparticles doped poly 3 anisidine nanocomposites with enhanced electrocatalytic activity for methanol oxidation

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ABSTRACT

We have explored the nanocomposites as a potential catalyst material in acid medium for the electro-oxidation of methanol. Electrochemical impedance studies have shown that the R_{ct} value of (Poly-3-Anisidine) P3A/GCE is lower than the modified P3A-metal oxide doped electrodes. In the case of doped metal oxides, we claim, this validates the slow electron transfer mechanism. Compared to P3A-MnO_2, P3A-Fe_2O_3 catalysts, the as-synthesized P3A-Cr_2O_3 displays an expanded electrochemically active surface region, substantially enhanced catalytic activity and improved stability for methanol oxidation reaction (MOR).

Selection and peer-review under responsibility of the scientific committee of the International Conference On Impact Of Innovations In Science And Technology For Societal Development: Materials Science.

1. Introduction

Direct Alcohol fuel cells (DAFCs) are one of the most promising energy conversion devices, due to their environmental friendliness and high energy conversion efficiency. Among various DAFCs, Direct methanol fuel cells have attracted increasing interest because of their potential applications in portable electronic devices[1–3]. Electrocatalytic applications which utilize conducting polymers is expected to offer a potential significant increase in efficiency[4]. Synthetic polymers were considered as insulators before the development of the idea of doping concept [5]. After this, the concept has been entirely changed. Intrinsically conducting polymers could conduct electricity of the order near to that of metal oxide nanoparticles by doping process[6]. Conjugated polymers like Polyanisidine, Polyaniline, Polypyrrole, Polyindole, Polythiophenes have numerous potential applications in electrical and electronics field[7]. Polyaniline and its derivatives (ortho methoxyaniline, meta methoxyaniline, para methoxyaniline) have much attention due to their easy synthesis methods and also offer good yield at low cost[8]. Very few electrocatalytic applications of poly-3-anisidine (P3A) (poly meta methoxyaniline) have been found in literature. Metal oxide nanoparticles doped polymer modified electrodes have been recently recognized to have potential applications in electrocatalysis.

In the present work we report the synthesis of novel poly-3-anisidine (P3A) using potassiumperdisulphate ($K_2S_2O_8$) as oxidant. The synthesized metal oxides and nanocomposites are exhibit excellent optical and electrical property. The phase of the synthesized sample with crystallites size was measured from X-ray diffraction (XRD) analysis. This study focuses on the synthesis of P3A nanocomposites using Cr_2O_3, MnO_2 and Fe_2O_3 nanoparticles for the applications of electro catalytic oxidation of methanol.

2. Experimental details

2.1. Synthesis of metal oxide nanoparticles

For synthesis of Cr_2O_3 nanoparticle, $K_2Cr_2O_7$ (2.5 g), starch (2.5 g), deionized water (100 mL) was uniformly mixed together

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A STUDY OF WOMEN EMPLOYMENT IN SERVICE SECTOR IN RADHAPURAM TALUK OF TIRUNELVELI DISTRICT

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ABSTRACT

Participation of women in economic activity in India is widespread from times immemorial. Women constitute almost half of any country's human endowment. They play a vital role in social growth. An employed woman, plays a dual role, that of a housewife, a financial contributor to the family, many a time, the sole earner. The present study is empirically focusing on the factors governing the employment pattern of women labour, their status and satisfaction, their motivational forces and the socio-economic conditions of the women labour in the service sector in Radhapuram Taluk of Tirunelveli district.

A sample of 140 working women is chosen for the study by adopting a simple random sampling method. Out of these 140 working women, 12 types of women working in the service sector such as teacher, doctor, nurse, telecommunication, housekeeping, bank staff, hotel and restaurant, travel agent, salesgirls, beauty parlour, tailoring and xerox and DTP have been taken for the study. For analysing the primary data and the secondary data, mean, standard deviation, 't' test, chi-square test, and Garrett's ranking statistical tools have used. The meaning of 't' was measured to determine the significant difference in women's satisfaction in the service sector based on family. The estimated value of 't' was found to be 0.5184, lower than the table value of 1.97, which is essential at the level of 0.05. The null hypothesis is thus acknowledged, and it is assumed that there is no substantial difference in the satisfaction of women in the service sector and the form of family.

Keywords: economic growth, economic necessity, human resources, motivational forces, entrepreneurship.

A STUDY OF WOMEN EMPLOYMENT IN PRIVATE SECTOR BANKS IN TIRUNELVELI DISTRICT

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ABSTRACT

In any economy, the banking sector is critical to agriculture, small businesses, and various industries. This paper examines the work satisfaction of female bank employees in Tamilnadu's Tirunelveli District. The critical goals of the research areas are listed below.

1. *To study the socio-economic status of women private bank employees.*
2. *To examine the employment status of women in private sector banks.*
3. *To understand the reasons for joining the banking sector*
4. *To find the occupational stress and health problems faced by women employees*
5. *To examine job satisfaction of women in private sector banks.*

The study is based on primary and secondary sources. The primary data relates to January 2021. The questionnaire was distributed through online Google forms to 150 women private bank employees in lockdown due to Covid 19. Secondary facts have collected from books, journals, newspapers, the internet and bulletins. Percentage, standard deviation, Garret ranking method, multiple regression analysis, chi-square test, and probability analysis used. Hence education, length of service and monthly salary are the predictor variables of job satisfaction in private sector banks. Therefore, this study covers a wide range of independent variables that significantly influence the job satisfaction of female employees working in private banks through an investigation. Besides, the private sector banks must regularly conduct work-life balance and family counselling programmes for their female employees. Also, the private sector banks should encourage discussions with their female employees through social media to understand and meet their work-life balance aspirations and needs.

Keywords: Banking sector, backbone, economic development, job satisfaction, work-life balance.

TREND AND GROWTH STATUS OF MICROFINANCE IN INDIA - A REVIEW

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Abstract:

Every continent and country have recognised and adopted Micro Finance as an anti-poverty programme. As the Micro Finance movement spreads around the world, more and more groups are offering loans to the needy. Introducing self-employment generation schemes that assist people earn money and become more efficient at earning their own living through microfinance programmes allows small loans to be made to the lowest of the poor. In addition to lending, microfinance programmes offer services such as training and development. Using Self Help Groups (SHGs) and Joint Liability Group (JLG) with banks, Micro Finance is a cost-effective and complementary method of rural credit disbursement that promotes the quick and timely availability of institutional credit in an economical and effective manner and in small funds without an excessive legal and procedural framework. Progress in MFI outreach and extension in India has been impressive. Microfinance and MFI outreach in India are examined in this research in light of this setting. It is found that the trend coefficient was found to be statistically significant for MFI loan disbursed by India. It includes an average MFI Loan Disbursed and MFI disbursed amount increased by 18.51 percent and by 13.92 percent respectively per annum during the study period. Thus, the growth rates are 13.97 percent and 10.85 percent for MFI Loan Disbursed and MFI Disbursed Amount, respectively. In the case of in Bank Loan Disbursed to SHGs, the trend coefficient was found to be statistically significant. It indicates, on average, the quantity in the Bank Loan Disbursed to SHGs that had increased by 6.82 percent annum over the study period. The growth rate is found to be 6.38 percent for India Bank Loan Disbursed to SHGs. R^2 indicates a variation explained by the time variable nearly from 61 percent to 79 percent on the dependent variable. The Indian government and the Reserve Bank of India must take the necessary steps to

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ON SOFT CONTRA $g^*\beta$-CONTINUOUS FUNCTIONS IN SOFT TOPOLOGICAL SPACES

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Abstract: We introduce a new class of soft contra generalized star beta continuous function (contra $g^*\beta^s$-conts function) in soft topological spaces. Also we present almost contra $g^*\beta^s$-continuous functions and we derive some basic properties.

Keywords and Phrases: Contra $g^*\beta^s$-continuous, almost contra $g^*\beta^s$-continuous, contra $g^*\beta^s$-irresolute.

2020 Mathematics Subject Classification: 54A40, 54C05, 54C10, 54C08.

1. Introduction

Initially the concept of generalized closed sets were introduced by Levine [3] in topological spaces in 1970. Molodtsov [4] pioneered the study of soft set theory as a new mathematical tool and confronted the fundamental results of the soft sets in 1996. Soft topological spaces(STS) are defined over an initial universe with a fixed set of parameters and was introduced by Munazza Naz & Muhammad Shabir [5]. The authors [6, 7] introduced the concept of generalized star β-closed sets in TS and soft $g^*\beta$-closed sets in STS. In this paper we introduced the new concept of contra $g^*\beta^s$-continuous function and contra $g^*\beta^s$-irresolute functions and we have discussed some properties. Also we present almost contra $g^*\beta^s$-continuous functions

A New Set of Soft Generalized*β −Locally Closed Sets in Soft Topological Spaces

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Abstract : We present a new set of soft generalized* β −locally closed set ($here\ after\ mentioned\ as,\ g^*\beta^s - lc$), $soft\ g^*\beta - lc^*$set ($here\ after\ mentioned\ as,\ g^*\beta^s - lc^*$), $soft\ g^*\beta - lc^{**}$ ($here\ after\ mentioned\ as, g^*\beta^s - lc^{**}$) sets in STS. Further to the above, the relation between the other notions connected with the forms of $soft - lc$ sets and some properties are studied.

Keyword:$g^*\beta^s$ −closed set, $g^*\beta^s - lc$ set, $g^*\beta^s - lc^*$set,$g^*\beta^s - lc^{**}$set.

AMS Subject Classification (2010): 54A40,54C05,54C08

1. Introduction

Initially the concept of generalized closed sets were introduced by Levine [3] in topological spaces in 1970. Molodtsov [4] pioneered the study of soft set theory as a new mathematical tool and confronted the fundamental results of the soft sets in 1996. Soft set theory has become an important application and it has become a significant tool for dealing with uncertainties integral with the problems in many scientific fields. Soft topological spaces(STS) are defined over an initial universe with a fixed set of parameters and was introduced by MunazzaNaz& Muhammad Shabir [5]. Also in 2015 Kannan [2] introduced soft generalized-locally closed sets in STS. The authors [6,7] introduced the concept of generalized star β-closed sets in TS and soft $g^*\beta$-closed sets in STS.We define $g^*\beta^s - lc$ set, $g^*\beta^s - lc^*$set, $g^*\beta^s - lc^{**}$sets in STS. Also we have introduced the new concept of $g^*\beta^s lc - continuous\ and\ g^*\beta^s lc - irresolute$ functions and we have discussed some properties. The straightforward proof of the theorems is omitted. For the concepts of STS we refer [1,2,6,7,9].

2. Soft $g^*\beta$ −Locally Closed sets

Definition: 2.1 A soft subset $(\mathcal{F}, E)$ of a STS $(\mathcal{U}, \tau, E)$is said to be a soft-$g^*\beta$ −locally closed set (here after called as,$g^*\beta^s - lc$ set) if $(\mathcal{F}, E) = (Q, E) \cap (S, E)$ where (Q, E) is $g^*\beta^s$ −open (briefly,$g^*\beta^s O$) and (S, E) is $g^*\beta^s$ −closed set (briefly,$g^*\beta^s C$).
It is denoted by $g^*\beta^s - lc(\mathcal{U}, \tau, E)$.

Definition: 2.2 A soft subset $(\mathcal{F}, E)$ of a STS $(\mathcal{U}, \tau, E)$is said to be a $g^*\beta^s - lc^*$set if there exists a $g^*\beta^s O$ set (Q, E) and soft closed (briefly,$\mathcal{C}^s$) set(S, E) of $\mathcal{U}$ such that $(\mathcal{F}, E) = (Q, E) \cap (S, E)$.
It is denoted by $g^*\beta^s - lc^*(\mathcal{U}, \tau, E)$.

Symmetric bi-interior ideals of Symmetric Semigroups

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Abstract: In this paper, as a further generalization of ideals, we introduce the notion of symmetric bi- interior ideal as a generalization of symmetric quasi ideal, symmetric bi-ideal and symmetric interior ideal of symmetric semigroup and study the properties of symmetric bi-interior ideals of symmetric semigroup and simple symmetric semigroup.

Keywords: symmetric quasi ideal(SQ-ideal), symmetric bi-ideal(Sbi-ideal), symmetric interior ideal(Si-ideal), symmetric bi-interior ideal(Sbii-ideal), symmetric bi-quasi ideal(SbiQ-ideal), bi-interior symmetric semigroup.

1.Introduction

In [3],[6] introduced the concepts of bi-ideals in semigroups. The notion of Quasi-ideals was introduced by [14]for rings and semigroups.

2.Preliminaries

Definition 2.1

Let S be a SSG of (S_3, o).A non empty subset A of S is said to be symmetric left ideal of S if $S \times^{\circ} A \supseteq A$ and A is said to be symmetric right ideal of S if $A \times^{\circ} S \supseteq A$. Similarly S in $(S_3, +^o)$, symmetric left ideal of S if $S \times^{+o} A \supseteq A$ and A is said to be symmetric right ideal of S if $A \times^{+o} S \supseteq A$. If A is both left and right ideal then it is called an symmetric two sided ideal of S.

Definition 2.2 Simple Symmetric Semigroup:

A symmetric semigroup S is said to be simple symmetric semigroup if S has no proper ideals.

Definition 2.3 symmetric bi-ideal (Sbi-ideal)

A subsemigroup S_1 of a SSG S in (S_3, o) is called a symmetric bi-ideal of S if $S_1 \cap (S \times^{\circ} S_1) = S_1$ Similarly S in $(S_3, +^o)$, if $S_1 \cap (S \times^{+o} S_1) = S_1$.

Definition 2.4 Symmetric Quasi –ideals (SQ-ideals)

Let S be a SSG of (S_3, o).A non empty subset Q of S is said to be Symmetric Quasi –ideals of S if $(S \times^{\circ} Q) \cap (Q \times^{\circ} S) = S$. Similarly S in $(S_3, +^o)$, $(S \times^{+o} Q) \cap (Q \times^{+o} S) \subseteq S$.

3.Main Results:

Definition 3.1 symmetric interior-ideal (Si-ideal)

A subsemigroup S_1 of a SSG S in (S_3, o) is called a symmetric interior-ideal of S if $(S_1 \times^{\circ} S) \cap S = S$. Similarly S in $(S_3, +^o)$, if $(S_1 \times^{+o} S) \cap S \subseteq S$.

Example 3.2

Let the elements of $S_3 = \{e, p_1, p_2, p_3, p_4, p_5\}$. The elements of SSG, $S = \{e, p_1, p_2, p_3\}$ The elements of SSSG ,$S_1 = \{e, p_1, p_2\}$. $S_1 \times^{+o} S = \{e, p_1, p_2\} \times^{+o} \{e, p_1, p_2, p_3\} = \{e, p_1, p_2, p_3\}$, $(S_1 \times^{+o} S) \cap S = \{e, p_1, p_2, p_3\} \cap \{e, p_1, p_2, p_3\} = S$

Symmetric Prime and Symmetric Semiprime Ideals in Symmetric Semirgroups

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Abstract: In this note we introduce the notion of Symmetric Prime and Symmetric Semiprime ideals in Symmetric Semiroups and we define completely symmetric prime and completely symmetric semiprime ideals also we derive some results based on the above concepts.
Keywords: Symmetric semigroup (SSG)-Ideals, SPr- Ideals, SSPr- Ideals, Product Compo of SSG, CSPr –Ideals, CSSPr-Ideals, C-System, PCC-System, Symmetric Complement Group.

1. Introduction

Prime Ideals play very important role in semigroups and are rooted from prime numbers of the integers.Especially ,it is cornerstone on commutative rings and topological semigroups.In [7],[8],[9] introduced the concept of Symmetric Semirings and Symmetric Semigroups, and symmetric semigroup ideals.Here, we introduce the notion of Symmetric Prime and Symmetric Semiprime ideals in Symmetric Semiroups and we define completely symmetric prime and completely symmetric semiprime ideals also we derive some results based on the above concepts.

2.Preliminaries

We define a new operation in composition mapping on S_3, that is called as plus circle compo, its satisfying the conditions in [8].

Definition 2.1 *(S_3,o)* Symmetric Semigroup

A non empty set S in S_3 together with a binary operation 'o' is called (S_3,o) symmetric Semigroup if 'o' is associative in (S_3,o) that is $eo(p_1op_2) = (eop_1)op_2$ *for some* $e,p_1,p_2 \in (S_3,o)$.
Similarly$(S_3, +^o)$ Symmetric semigroup also satisfies $e+^0(p_1+^0p_2) = (e+^0p_1)+^0p_2$ *for some* $e,p_1,p_2 \in (S_3,+^0)$.

3.Main Results

Definition 3.1 (S_3,o)& $(S_3, +^o)$ *–Commutative SSG*
If $p_1 o p_2 - p_2 op_1$,& if $p_1 +^o p_2 - p_2 +^o p_1$,we say that p_1 and $p_2$commute with each other ; if $p_1 o p_2 - p_2 op_1$ & if $p_1 +^o p_2 - p_2 +^o p_1$ for all elements $p_1, p_2 \in S$,we call S is commutative SSG.

Example 3.2

(i) Let S be a SSG of $(S_3, +^o)$. The elements of $S = \{e, p_1, p_2\}$. Then we have

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RESEARCH ARTICLE

Equitable Detour Global Domination Number of a Graph

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ABSTRACT

In this paper, we introduce a new domination parameter, called equitable detour global domination number of a graph. A subset D of V(G) is a detour global dominating set if for every vertex of G is contained in a longest path between any pair of vertices in D and global dominating set. The minimum number of vertices taken over all detour global dominating sets of G is called the detour global domination number of G and is denoted by $\gamma_{dng}(G)$. A detour global dominating set of cardinality$\gamma_{dng}(G)$ is called a γ_{dng}- set of G.A detour global dominating set D of V(G) is called an equitable detour global dominating set if for every vertex $a \in V$ not in D, there exists a vertex $b \in D$ such that $ab$is an edge of Gand$|deg(a) - deg(b)| \leq 1$. The minimum number of vertices taken over all equitable detour global dominating sets of G is called the equitable detour global domination number of G and is denoted by$\gamma_{dng}^{e}(G)$. We determine γ_{dng}^{e} for some standard class of graphs and characterize the detour global domination and equitable detour global domination parameters are equal.

Keywords: Detour set, detour global dominating set. equitable detour global dominating set Mathematical subject classification 05C12, 05C70.

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RESEARCH ARTICLE

A New Approaches About Contra $g^*\beta$ –Continuous Functions in Topological Spaces

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ABSTRACT

Initially the concept of $g^*\beta$-closed sets were introduced by Punitha Tharani. A and Sujitha.H [8] in topological spaces in 2020. Now, we introduce a new sets Contra generalized star beta continuous function (briefly,$Contra g^*\beta - continuous\ function$) in topological spaces. Also we present almost contra $g^*\beta$-continuous functions and some of its characteristics and several properties are investigated. **Mathematics Subject Classification (2010):** 54A04, 54C08, 54C10.

Keywords: $contra\ g^*\beta - continuous, almost\ contra\ g^*\beta - continuous, contra\ g^*\beta - irresolute.$

INTRODUCTION

The notion of contra and almost contra was introduced by Dontchev [5] in 1996. Along with him Noiri [6] introduced a new weaker form of functions called contra semi continuous function. Contra pre-continuous functions was introduced by Noiri [7]. In 2004 almost contra pre-continuous function was introduced by Ekici.E [4]. Following this, numerous author presented numerous kinds of new generalizations of contra-continuity, contra semi-continuity,

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RESEARCH ARTICLE

Equitable Detour Global Domination Number of Some Special Graphs

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ABSTRACT

A subset D of V(G) is a detour global dominating set if for each vertex of G is contained in a longest path between any pair of vertices in D and global dominating set. A detour global dominating set D of V(G) is called an equitable detour global dominating set if for each vertex $a \in V$ not in D, there exists a vertex $b \in D$ such that ab is an edge of G and $|deg(a) - deg(b)| \leq 1$.In this paper, we discuss the detour global domination number and equitable detour global domination number of graphs such as lollipop $L_{n,m}$,Windmill $Wd(n,m)$, Friendship F_n, Jellyfish $J(n,m)$ and subdivision of Jellyfish $S(J(n,m))$.

Mathematical subject classification: 05C12, 05C70

Keywords: Detour global domination number, equitable detour global domination number

INTRODUCTION

By a graph G = (V, E), we consider a finite undirected connected graph without loops or multiple edges. The order and size of G are denoted by n, m respectively. The concept of Detour Global Dominating graphs was introduced in [3]. For underlying definition and results, see references.

Preliminaries

Definitions and Notations 2.1

- A lollipop graph $L_{n,m}$ is the graph obtained by joining K_n to P_m with a bridge.

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Research Paper

A Study on Symmetric Subgroups

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ABSTRACT: *In this note we define symmetric subgroups under the operators composition and plus circle compo.Also we derive some results based on the above concepts.*
KEYWORDS: *Symmetric groups,Symmetric subgroups , Composition ,Plus circle compo.*

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I. INTRODUCTION

In mathematics, the symmetric group on a set is the group consisting of all bijections of the set (all one-to-one and onto functions) from the set to itself with function composition as the group operation. The symmetric group is important to diverse areas of mathematics such as Galois theory, invariant theory, the representation theory of Lie groups, and combinatorics. Cayley's theorem states that every group G is isomorphic to a subgroup of the symmetric group on G.

II. PRELIMINARIES

Definition 2.1:
Let A be a finite set containing n elements. The set of all permutations of A is clearly a group under the composition of functions. This group is called the symmetric group of degree n and is denoted by S_n.

Definition 2.2:
Let G be a group, a subset H of G is called a subgroup of G if H itself is a group under the operation induced by G.

Definition 2.3: (Reverse Composition - O_R)
Let us consider a symmetric group S_2. The elements of S_2 are $\{\binom{1\,2}{1\,2},\binom{1\,2}{2\,1}\} = \{e, p_1\}$
The Reverse Composition is defined as in S_2, $e\, O_R\, p_1 - \binom{1\,2}{1\,2}\ O_R \binom{1\,2}{2\,1}$
The composition mapping is $1 \Rightarrow 1 \Rightarrow 2$ here we define the reverse composition mapping as
$1 \to 1 \to 2$ (i e) $2 \to 1$
similarly, $2 \to 2 \to 1$ (i e) $1 \to 2$

$$e\ O_R\ p_1 - \binom{1\,2}{2\,1} = p_1$$

and also $p_1\, O_R\, e = \binom{1\,2}{1\,2}\ O_R\ \binom{1\,2}{2\,1}$
(i e) $1 \to 1 \to 2 \Rightarrow 2 \to 1$
$2 \to 2 \to 1 \Rightarrow 1 \to 2.$

$$p_1\, O_R\, e = \binom{1\,2}{1\,2} = p_1$$

It's clearly O_R is also a binary operation.

Definition 2.4:
We define a new operation in composition mapping on S_3, that is called as plus circle compo,

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V_4-Vertex Magic Labeling for Hypercubes

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Abstract

This article deals with the investigation of V_4-vertex magic labeling on Hypercube, Double edge connected path union of hypercubes, Double edge connected open star of hypercubes and Double edge connected open star of path union of hypercubes.

Keyword: $DEC\ P_mQ_n, DECS(m,Q_n), DEC\ S(m,P_n,Q_n), Q_n$.

AMS subject classification (2010): 05C78

1. Introduction

For a non-trivial abelian group V_4-under multiplication a graph G is said to be V_4- magic graph if there exists a labeling g of the edges of G with non-zero elements of V_4-such that the vertex labeling g^* defined as $g^*(v) = \prod_u g(uv)$ taken over all edges uv incident at v is a constant.

Let V_4={i,-i,1,-1}

This article deals with the investigation of V_4- vertex magic label on Hypercube, Path union of hypercube, Union of Overlapping open star of Hypercube, Overlapping open star of path union of Hypercube.

2. Preliminaries

Definition 2.1: A graph obtained by replacing each vertex of $K_{1,n}$ except the apex vertex by the graph $G_1, G_2, \dots, G_n$ is known as an Open star of graphs which is denoted by $S(G_1, G_2, \dots, G_n)$. If we replace each vertex of $K_{1,n}$ except the apex vertex by a graph G.

(i.e) $G_1 = G_2 = \cdots = G_n$

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V_4-Vertex Magic Labeling for Hypercubes

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Abstract

This article deals with the investigation of V_4-vertex magic labeling on Hypercube, Double edge connected path union of hypercubes, Double edge connected open star of hypercubes and Double edge connected open star of path union of hypercubes.

Keyword: $DEC\ P_mQ_n, DECS(m,Q_n), DEC\ S(m,P_n,Q_n), Q_n$.

AMS subject classification (2010): 05C78

1. Introduction

For a non-trivial abelian group V_4-under multiplication a graph G is said to be V_4- magic graph if there exists a labeling g of the edges of G with non-zero elements of V_4-such that the vertex labeling g^* defined as $g^*(v) = \prod_u g(uv)$ taken over all edges uv incident at v is a constant.

Let V_4={i,-i,1,-1}

This article deals with the investigation of V_4- vertex magic label on Hypercube, Path union of hypercube, Union of Overlapping open star of Hypercube, Overlapping open star of path union of Hypercube.

2. Preliminaries

Definition 2.1: A graph obtained by replacing each vertex of $K_{1,n}$ except the apex vertex by the graph $G_1, G_2, \dots, G_n$ is known as an Open star of graphs which is denoted by $S(G_1, G_2, \dots, G_n)$. If we replace each vertex of $K_{1,n}$ except the apex vertex by a graph G.

(i.e) $G_1 = G_2 = \cdots = G_n$

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Research Article

Vertex Magic Labeling On V_4 for Cartesian product of two cycles

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Abstract: Let V_4 be an abelian group under multiplication. Let $g: E(G) \to V_4$. Then the vertex magic labeling on V_4 is induced as $g^*: V(G) \to V_4$ such that $g^*(v) = \prod_u g(uv)$ where the product is taken over all edges uv of G incident at v is constant. A graph is said to be V_4 - magic if it admits a vertex magic labeling on V_4. In this paper, we prove that $C_m \times C_n, m \geq 3, n \geq 3$, Generalized fish graph, Double cone graph and four Leaf Clover graph are all V_4 -magic graphs.

Keyword: Vertex magic labeling on V_4, V_4 -magic graph, Four Leaf Clover Graph.

AMS subject classification (2010): 05C78

1. Introduction

For a non-trivial abelian group V_4 under multiplication a graph G is said to be V_4 -magic graph if there exist a labeling g of the edges of G with non-zero elements of V_4 such that the vertex labeling g^* defined as $g^*(v) = \prod_u g(uv)$ taken over all edges uv incident at v is a constant.

Let $V_4 = \{i, -i, 1, -1\}$ we have proved that the Cartesian product of two graphs,Generalized fish graph, Happy graph,Four Leaf Clover Graph are all
V_4 -magic graphs.

2. Basic Definition

Definition: 2.1Cartesian Product of Two graphs

Cartesian product of two graphs G, H is a new graph GH with the vertex set $V \times V$ and two vertices are adjacent in the new graph if and only if either $u = v$and u' is adjacent to v' in H or $u' = v'$ and u is adjacent to v in G.

Definition: 2.2Generalized Fish Graph

The generalized fish graph is defined as the one point union of any even cycle with C_3. It is denoted by $GF(2n, 3)$. It has $2n + 2$ vertices and $2n + 3$ edges.

Theorem: 2.3 Cartesian product of two cycles $C_m \times C_n$ is a V_4-magic graph with $m, n \geq 3$.

Proof:

Let $V(C_m \times C_n) = \{v_j: 1 \leq j \leq m\} \cup \{v'_j : 1 \leq j \leq m\} \cup \{v''_j : 1 \leq j \leq m\} \cup \{v'''_j: 1 \leq j \leq m\}$

$E(C_m \times C_n) = \{v_j v_{j+1}: 1 \leq j \leq m\} \cup \{v'_j v'_{j+1}: 1 \leq j \leq m\} \cup \{v''_j v''_{j+1} : 1 \leq j \leq m\} \cup \{v'''_j v'''_{j+1} : 1 \leq j \leq m\} \cup \{v_j v'_j : 1 \leq j \leq m\} \cup \{v'_j v''_j : 1 \leq j \leq m\} \cup \{v''_j v'''_j : 1 \leq j \leq m\} \cup \{v'''_j v_j : 1 \leq j \leq m\}$

$[v_{m+1} = v_1;\ v'_{m+1} = v'_1;\ v''_{m+1} = v''_1;\ v'''_{m+1} = v'''_1; v_0 = v_m;\ v'_0 = v'_m;\ v''_0 = v''_m; v'''_0 = v'''_m]$

Case 1: Let $m, n \geq 3$ and both are even.

Let us define $g: E(C_m \times C_n) \to \{i, -i, -1\}$ as

$g(v_j v_{j+1}) = iwhenjisodd\ ;\ 1 \leq j \leq m$

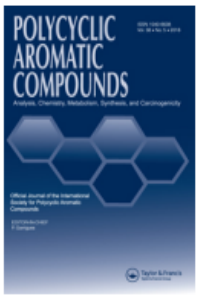
$g(v_j v_{j+1}) = -iwhenjiseven\ ;\ 1 \leq j \leq m$

$g(v'_j v'_{j+1}) = iwhenjisodd\ ;\ 1 \leq j \leq m$

$g(v'_j v'_{j+1}) = -iwhenjiseven\ ;\ 1 \leq j \leq m$

$g(v''_j v''_{j+1}) = iwhenjisodd\ ;\ 1 \leq j \leq m$

$g(v''_j v''_{j+1}) = -iwhenjiseven\ ;\ 1 \leq j \leq m$



Polycyclic Aromatic Compounds

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Molecular Structural Characterization of Cycloparaphenylene and its Variants

S. Prabhu, G. Murugan, S. Kulandai Therese, M. Arulperumjothi & Muhammad Kamran Siddiqui

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FUZZY *s*-DOMINATING ENERGY

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Abstract

The energy of a graph is defined as the sum of the absolute values of eigenvalues of its adjacency matrix. The absolute value of the largest eigenvalue is called the spectral radius of the graph. This article introduces *s*-dominating energy in simple connected crisp graphs and extends the same to connected fuzzy graphs. Also *s*-dominating energy of a complete fuzzy graph is determined and bounds on fuzzy *s*-dominating energy are acquired.

1. Introduction

Eigenvalues and Eigen vectors of matrices have huge real life applications. Steiner domination number in crisp graphs has been studied from [7]. Also domination in fuzzy graphs was studied from [2]. The close relation between eigenvalues of dominating matrix and dominating energy are expounded in [3], [4] and [5]. The different types of energies of fuzzy graphs are explicated in [1] and [8]. These studies lead us to introduce Steiner dominating energy (i.e.) *s*-dominating energy in crisp graphs and is then extended to fuzzy graphs.

2010 Mathematics Subject Classification: 05C72, 05C69, 51E10.

Keywords: fuzzy *s*-dominating matrix, fuzzy *s*-dominating eigen values, fuzzy *s*-dominating spectrum.

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FUZZY *s*-DOMINATING ENERGY

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Abstract

The energy of a graph is defined as the sum of the absolute values of eigenvalues of its adjacency matrix. The absolute value of the largest eigenvalue is called the spectral radius of the graph. This article introduces *s*-dominating energy in simple connected crisp graphs and extends the same to connected fuzzy graphs. Also *s*-dominating energy of a complete fuzzy graph is determined and bounds on fuzzy *s*-dominating energy are acquired.

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The Upper Connected Square Free Detour Number of a Graph

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Abstract
For any two vertices u and v in a connected graph $G = (V, E)$, the u - v path P is called a u - v square free path if no four vertices of P induce a square. The square free detour distance is the length of a longest u - v square free path in G. A u - v path of length is called a u - $v$square free detour. A subset S of V is called a square freedetour set if every vertex of G lies on a u - v square free detour joining a pair of vertices of S. The square free detour of G is the minimum order of its square free detour sets. A square free detour set S of G is called a minimal square free detour set if no proper subset of S is a square free detour set of G. The upper square free detour numberof G is the maximum cardinality of a minimal square free detour set of G. We introduce the upper connected square free detour number and determine the upper connected square free detour number of certain classes of graphs. Further, we investigate the bounds for it and characterize the graphs which realize these bounds. We show that there is no "Intermediate Value Theorem" for minimal connected square free detour sets.

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Keywords: upper square free detour number; minimal square free detour set; minimal connected square free detour set; upper connected square free detour number.

1 Introduction

By a graph$G = (V, E)$, we mean a finite undirected connected simple graph. For basic definitions and terminologies, we refer to Chartrand et al. [6]. The concept of geodetic number was introduced by Harary et al. [1], [7]. For any vertices u and v in a connected graph G, the distance $d(u, v)$ is the length of the shortest $u - v$ path in G. A $u - v$ path of length $d(u, v)$ is called a $u - v$ geodesic. A set $S \subseteq V$ is called geodetic set of G if every vertex of G lies on a geodesic joining a pair of vertices of S. The geodetic number $g(G)$ of G is the minimum order of its geodetic sets and any geodetic set of order $g(G)$ is called a geodetic basis of G. The concept of detour number was introduced by Chartrand et al. [4], [5]. The detour distance$D(u, v)$is the length of the longest $u - v$ path in G.A $u - v$ path of length $D(u, v)$ is called a u − v detour. A set $S \subseteq V$ is called detour set of G if every

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C_4 Free Detour Center

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ABSTRACT

For every connected graph G, the square free detour distance SFD (u, v) is the length of a longest u- v square free path in G, where u, v are the vertices of G. A u-v square free path of length SFD(u, v) is called the u-v square free detour. It is found that the square free detour distance differs from the distance , monophonic distance and detour distance. The square free detour radius is found for some standard graphs. Their bounds are determined and their sharpness is checked. Certain general properties satisfied by them are studied. Existence of graphs is also found.

1991 Mathematics Subject Classification. 05C12.

Keywords and phrases. Distance, Detour Distance, Square Free Detour Distance.

1. Introduction

Basic definitions are studied from [1], [3] and [5]. when a railway line, pipe line or highway is constructed, the distance between the respective structure and each of the communities to be served is to be minimized. In a social network an edge represents two individuals having a common interest. Thus the centrality have interesting applications in social networks. If we consider a cycle of length 4, the serve can be made only to any two communities or vertices. This motivated us to introduce the square free detour center.

2. C_4 FREE DETOUR CENTER

Definition:2.1

Let G be a connected graph. A vertex's sfd eccentricity in G is defined as sfe(u) = max {SFD(u, v) : v ∈ V (G)}. The formula sfrad(G) = min {sfe(u) : u ∈ V(G)} determines the sfd radius of G. The formula sfdiam(G) = max {sfe(u) : u ∈ V (G)} determines the sfd diameter of G.

Note 1. Every pair of vertices v,w in a tree T are connected by a unique path, therefore $d(v,w) = d_m(v,w) = D_{\Delta f}(v,w) = SFD(u,v) = D(v,w)$. Consequently,

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Research Article

The Upper Total Triangle Free Detour Number of a Graph

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Abstract: For a connected graph G = (V,E) of order at least two, a total triangle free detour set of a graph G is a triangle free detour set S such that the subgraph G[S] induced by S has no isolated vertices. The minimum cardinality of a total triangle free detour set of G is the total triangle free detour number of G. It is denoted by ⟦tdn⟧_Δf (G). A total triangle free detour set of cardinality ⟦tdn⟧_Δf (G) is called ⟦tdn⟧_Δf- set of G. In this article, the concept of upper total triangle free detour number of a graph G is introduced. It is found that the upper total triangle free detour number differs from total triangle free detour number. The upper total triangle free detour number is found for some standard graphs. Their bounds are determined. Certain general properties satisfied by them are studied.

Keywords: total triangle free detour set, total triangle free detour number, upper total triangle free detour set, upper total triangle free detour number.
AMS Subject classification: 05C12
Corresponding Author: S. Lourdu Elqueen

1. Introduction

For a graph $G = (V, E)$, we mean a finite undirected connected simple graph. The order of G is represented by n. We consider graphs with at least two vertices. For basic definitions we refer [3]. For vertices u and v in a connected graph G, the detour distance $D(u, v)$ is the length of the longest $u - v$ path in G. A $u - v$ path of length $D(u, v)$ is called a $u - v$ detour. This concept was studied by Chartrand et.al [1].

A chord of a path P is an edge joining two non-adjacent vertices of P. A path P is called a monophonic path if it is a chordless path. A longest $x - y$ monophonic path is called an $x - y$ detour monophonic path. A set S of vertices of G is a detour monophonic set of G if each vertex v of G lies on an $x-y$ detour monophonic path for some x and y in S. The minimum cardinality of a detour monophonic set of G is the detour monophonic number of G and is denoted by $dm(G)$. The detour monophonic number of a graph was introduced in [8] and further studied in [7].

A total detour monophonic set of a graph G is a detour monophonic set S such that the subgraph $G[S]$ induced by S has no isolated vertices. The minimum cardinality of a total detour monophonic set of G is the total detour monophonic number of G and is denoted by $dm_t(G)$. A total detour monophonic set of cardinality $dm_t(G)$ is called a dm_t-set of G. These concepts were studied by A. P. Santhakumaran et. al[6].

The concept of triangle free detour distance was introduced by Keerthi Asir and Athisayanathan [4]. A path P is called a triangle free path if no three vertices of P induce a triangle. For vertices u and v in a connected graph G, the triangle free detour distance $D_{\Delta f}(u, v)$ is the length of a longest $u - v$ triangle free path in G. A $u - v$ path of length $D_{\Delta f}(u, v)$ is called a $u - v$ triangle free detour. For any two vertices u and v in a connected graph G, $0 \leq d(u, v) \leq dm(u, v) \leq D_{\Delta f}(u, v) \leq D(u, v) \leq n - 1$.

The triangle free detour eccentricity of a vertex v in a connected graph G is defined by $e_{\Delta f}(v) = \max\{D_{\Delta f}(u, v): u, v \in V\}$. The triangle free detour radius of $G$is defined by $rad_{\Delta f}(G) = \min\{e_{\Delta f}(v): v \in V\}$ and The triangle free detour diameter of $G$is defined by $diam_{\Delta f}(G) = \max\{e_{\Delta f}(v): v \in V\}$

A total triangle free detour set of a graph G is a triangle free detour set S such that the subgraph $G[S]$ induced by S has no isolated vertices. The minimum cardinality of a total triangle free detour set of G is the total triangle free detour number of G. It is denoted by $tdn_{\Delta f}(G)$. A total triangle free detour set of cardinality $tdn_{\Delta f}(G)$ is called $tdn_{\Delta f}$ - set of G.

A vertex v of a connected graph G is called a support vertex of G if it is adjacent to an end vertex of G. Two adjacent vertices are referred to as neighbors of each other. The set N(v) of neighbors of a vertex v is called the neighborhood of v. A vertex v of a graph G is called extreme vertex if the subgraph induced by its neighbourhood is complete.The following theorems will be used in the sequel.

Theorem 1.1: Let G be a connected graph of order n, then $2 \leq dn_{\Delta f}(G) \leq tdn_{\Delta f}(G) \leq cdn_{\Delta f}(G) \leq n$.

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A Note on Square Free Detour Distance in Graphs

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Abstract
In this paper, we investigate the results on square free detour number of a simple, connected graph $G = (V, E)$ of order $n \geq 2$. It is proved that for any two vertices u and v in a connected graph G, $0 \leq d(u,v) \leq d_m(u,v) \leq D_{\square f}(u,v) \leq D(u,v) \leq n-1$. The relationship between radious and diameter of various distance concepts is discussed. It is also shown that for each pair a, b of positive integers with $3 \leq a \leq b$, there exists a connected graph G with $rad_{\square f}(G) = a$ and $diam_{\square f}(G) = b$.
Keywords: distance; detour distance; triangle free detour distance; square free detour distance.

1 Introduction

For any vertices u and v in a finite undirected connected simple graph $G = (V, E)$, the distance $d(u,v)$ is the length of the shortest $u-v$ path in G. A $u-v$ path of length $d(u,v)$ is called a $u-v$ geodesic. For a vertex v in a connected graph G, the eccentricity $e(v)$ of v is the distance between v and a vertex farthest from v in G. The minimum eccentricity among the vertices of G is its radius and the maximum eccentricity is its diameter, which are denoted by $rad(G)$ and $diam(G)$ respectively. Two vertices u and v of G are antipodal if $d(u,v) = diam(G)$. This geodesic concept was studied and extended to detour distance by Chartrand et. al. [2-5]. For two vertices u and v in a connected graph G, the detour distance $D(u,v)$ from u to v is defined as the length of a longest $u-v$ path in G. A $u-v$ path of length $D(u,v)$ is called a $u-v$ detour. The detour eccentricity $e_D(v)$ of v is the detour distance between the vertex v and a vertex farthest from v in G. The minimum detour eccentricity among the vertices of G is the detour radius $rad_D(G)$ of G and the maximum detour eccentricity is its detour diameter $diam_D(G)$ of G. This detour concept was further studied by Santhakumaran et. al. [11] For two vertices u and v in a connected graph G, a longest $u-v$ chordless path is called a $u-v$ detour monophonic. This detour monophonic distance was studied by Titus et. al. [10,11]. Further, the triangle free detour distance was introduced and studied by Keerthi Asir, Sethu Ramalingam and Athisayanathan [7-9]. The triangle free detour eccentricity $e_{\Delta f}(u)$ of a vertex u in G is the maximum triangle free detour distance from u to a vertex of G. The square free detour radius, $R_{\Delta f}$ of G is the minimum square free detour eccentricity among the vertices of G, while the triangle free detour diameter, $D_{\Delta f}$ of G is the maximum triangle free detour eccentricity among the vertices of G. In this paper, a similar concept of square free detour distance is introduced and investigated. For basic terminology refer to [1,6].

TREND AND GROWTH STATUS OF MICROFINANCE IN INDIA - A REVIEW

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Abstract:

Every continent and country have recognised and adopted Micro Finance as an anti-poverty programme. As the Micro Finance movement spreads around the world, more and more groups are offering loans to the needy. Introducing self-employment generation schemes that assist people earn money and become more efficient at earning their own living through microfinance programmes allows small loans to be made to the lowest of the poor. In addition to lending, microfinance programmes offer services such as training and development. Using Self Help Groups (SHGs) and Joint Liability Group (JLG) with banks, Micro Finance is a cost-effective and complementary method of rural credit disbursement that promotes the quick and timely availability of institutional credit in an economical and effective manner and in small funds without an excessive legal and procedural framework. Progress in MFI outreach and extension in India has been impressive. Microfinance and MFI outreach in India are examined in this research in light of this setting. It is found that the trend coefficient was found to be statistically significant for MFI loan disbursed by India. It includes an average MFI Loan Disbursed and MFI disbursed amount increased by 18.51 percent and by 13.92 percent respectively per annum during the study period. Thus, the growth rates are 13.97 percent and 10.85 percent for MFI Loan Disbursed and MFI Disbursed Amount, respectively. In the case of in Bank Loan Disbursed to SHGs, the trend coefficient was found to be statistically significant. It indicates, on average, the quantity in the Bank Loan Disbursed to SHGs that had increased by 6.82 percent annum over the study period. The growth rate is found to be 6.38 percent for India Bank Loan Disbursed to SHGs. R^2 indicates a variation explained by the time variable nearly from 61 percent to 79 percent on the dependent variable. The Indian government and the Reserve Bank of India must take the necessary steps to

IMPACT OF LOANS ISSUED AND THE RECOVERY OF LOANS BY COMMERCIAL BANKS IN THE POST REFORM PERIOD

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Abstract

The economy's backbone is its banking system. Economic development is strongly aided by a well-developed financial system, which leads to higher national income and living standards. The presence of integrated, established, and regulated financial markets and institutions that cater to the financial needs of both the household and corporate and government sectors characterises an organised financial system. The study's goal is to determine the effects of banking reforms in India by looking at lending and reinstatement of commercial bank loans over the post-reform era, which spans 1990-91 to 2019-20.

The study draws on secondary data from a variety of sources, including annual reports from various banks, the RBI newsletter, various Indian banking reports, Indian Bank Association publications, the Indian Banking Institute, the National Bank Management Institute, and various journals in related fields. Mean, Standard Deviation, CAGR, correlation co-efficient, and co-efficient of variations are all percentage techniques that have been used.

According to the study, from 1990-91 to 2019-20, the average amount of loans issued was Rs. 3121.18, whereas the average amount of loans recovered in the post-reform period was Rs. 13754.34. However, between 1990 and 2019, the total amount of loans issued and loans recovered grew at a positive CAGR of 2.47 percent and 5.51 percent, respectively, with a high CV of 16.80 percent and 1.28 percent and a high CV of 16.80 percent and 1.28 percent. Between issued loans and loan recovery, the post-reform period has a 0.914 correlation coefficient. The association between loans that have been issued and those that have been recovered is undeniably beneficial. This demonstrates that, following the reform, a greater rate of loan issuance led to a higher rate of debt collection from loan beneficiaries. The bank's loan recovery performance has thus been rated satisfactory in the post-reform period.

Keywords: financial system, economic development, economic reforms, technical efficiency, correlation coefficient.