Shrimati Indira Gandhi College

(Nationally Re-accredited at 'A' Grade by NAAC)

Tiruchirappalli-2

SIGARIA -2013

RESEARCH JOURNAL

Shrimati Indira Gandhi College
(Nationally Re-accredited at 'A' Grade by NAAC)
Tiruchirappalli-2

SIGARIA

RESEARCH JOURNAL

SHRIMATI INDIRA GANDHI COLLEGE

(Nationally Re-Accredited with 'A' Grade by NAAC)

Chatram Bus Stand, Tiruchirappalli-2, TamilNadu, India.
Tele Fax: 0431-2702797
e-mail   : sigctr@gmail.com

SHRI.S. KUNJITHAPATHAM, B.Com, B.L
SECRETARY

It is indeed a matter of pride that four departments of the college have been recognized as research departments in the college. The number of faculty pursuing research is also simultaneously increasing every year. I am glad the faculties have taken the motivation of the Management towards research in the right spirit. I wish them all success in their goals.

SECRETARY

\

SHRIMATI INDIRA GANDHI COLLEGE

(Nationally Re-Accredited with 'A' Grade by NAAC)

Chatram Bus Stand, Tiruchirappalli-2, TamilNadu, India.

Dr. S. VIDHYALAKSHMI, M.Sc., M.Phil, B.Ed., Ph.D   Phone: 0431-2702797

PRINCIPAL

FOREWORD

We have seen another fruitful year of academic excellence. The support and rewards given by the Management to promote research activities have brought about rapid strides in research activities in our college. I appreciate and congratulate all faculty members who have published their articles in research journals. Other faculty who do not publish must learn from their peers. The efforts of the editorial team also needs special mention in bringing out this fourth volume.

PRINCIPAL

Email:vidhyasigc@gmail.com

Department of Bank Management

Abstract:

Foreign Direct Investment (FDI) in all over the world in general and in India in particular after the opening up of markets with the adoption of the policies such as globalization, privatization and liberalization has no doubt emerged as one of the most significant source and contributor of external inflow of resources and is one of the most crucial contributors to the capital formation in India despite their share in the world arena is still catching up. When we talk about the term FDI we are talking about a bundle of resources that usually flow into a country including besides capital, production technology, global managerial skills, innovative marketing strategies and access to new markets. Though the policies are reviewed frequently, India is lagging behind when compared with countries like china. So it is high time that the Indian government takes steps to further liberalize the economy and streamline and liberalize the policies to make India the most preferred FDI destination in the world.

Department of Bio-Chemistry

- **Ms. P. Anitha, Ms. M. Anu, & Ms. M. Bharani-** "Antibacterial, Antifungal and Phytochemical Investigation of Acacia Nilotica", International Journal of Phytotherapy (peer reviewed), http://www.phytotherapy journal.com, ISSN 2249-7730, Vol.3 (2), Page No.98-103, 2013.

Abstract:

In the present study identifying a common human pathogen. To identify and characterize the secondary metabolite responsible for anti bacterial activity. Identification of compounds from the extracts.

- **Ms. M. Bharani, Ms. P.Lakshmi Prabha, & Ms. M. Anu-** "Treatment of dye industry effluent by free and immobilized fungi", International Journal of Pharmacy Life Science, (Peer Reviewed), http://www.ijpl's journal.com, (IC=3.75), ISSN: 0976-7126, Vol. 4(1), Page No: 2340-2346, Jan2013.

Abstract:

Some of the industries that discharge highly colored effluents are paper and pulp mills, textiles and dye-making industries, alcohol distilleries and leather industries. Terrestrial white-rot basidiomycetous fungi and their lignin degrading enzymes laccase, manganese-peroxidase and lignin peroxidases are useful in the treatment of colored industrial effluents and other xenobiotics. In the present study different 13 species of fungi were isolated from the effluent. Among the isolated fungi asperigillus was the dominant genus in the effluent. Except dissolved oxygen, all other parameters showed decreased level when compare to control. The BOD and COD level were reduced significantly. Immobilized Aspergillus showed better removal of pollutants than free cells of Aspergillus.

Department of Chemistry

🔴 **Ms. M. Anu, Ms. J. Therese Punitha** - " Biological Activity Study on Indole Acetic acid and Its Cobalt (II), Nickle (II) and Copper(II), Complexes", International Journal of Life Sciences, (Peer Reviewed), *http://www.ijplsjournal.com*, IF:0.322, IC Value:3.75, ISSN: 0976-7126, Page No. 2746-2750, June 2013.

Abstract:

Indole acetic acid complexes have been prepared and characterized by elemental analysis, H NMR and UV- visible spectra and electro-chemical measurements. The anti-microbial properties of these compounds have been evaluated against the test strains(A. Niger, St. aures- Streptococcus aureus) and thus a significant use of such compounds as antibacterial agents is reported. The biological activity data show that the present compounds are found to have greater antibacterial and anti fungal activity than the respective standards.

🔴 **Ms. J. Therese Punitha-** "Complexation behavior of 3-indole acetic acid with dispositive metal ions and the characterization of the complexes", International journal of pharmacy & life sciences (peer reviewed), http://www.ijpls journal.com, (IF-0.322), (ICV-3.75), ISSN 0976-7123, Vol. 4(6), Page No.2638-2643, May 2013.

Abstract:

On literature review, the studies on carboxylic acids reveal that their coordination chemistry has been studied extensively. However, in view of the absence of report on the coordination chemistry of substituted acetic acid moieties the present investigation has been undertaken. In the present work, in-dole acetic acid(IAA) a base moiety was characterized by elemental analysis, Ultra Violet-Visible, FT-IR and H NMR Spectroscopy and magnetic susceptibiliy. Studies and the interaction of the base IAA with bivalent metal ions like cobalt , copper, and nickel ions in non-aqueous media like ethanol was studied. The metal complexes of cobalt, copper, and nickel ions with IAA are synthesized in solid state and their characterization was done by chemical analysis. Electrical conductivity elemental analysis and spectral measurements (UV-visible FT-IR and H NMR) Magnetic susceptibility values have also been measured for the complexes synthesized.

🔴 **Ms. J. Therese Punitha-** "Interaction of naphthalene acetic acid with dispositive metal ions and the characterization of the complexes International journal of pharmacy & life sciences (peer reviewed), http://www.ijpls journal.com, (IF-0.322), (ICV-3.75), ISSN 0976-7123, Vol. 4(6), Page No 2672-2679, May 2013.

Abstract:

On literature review, the studies on carboxylic acids reveal that their coordination chemistry has been studied extensively. However, in view of the absence of report on the coordination chemistry of substituted acetic acid moieties the present investigation has been undertaken. In the present work, Naphthalene acetic acid (NAA) a base moiety was characterized by elemental analysis, Ultra Violet-Visible, FT-IR and H NMR Spectroscopy and Magnetic susceptibility. Studies and the interaction of the base NAA with bivalent metal ions like cobalt, copper, and nickel and mercury in non-aqueous media like ethanol was studied. The metal complexes of cobalt, copper, and nickel and mercury ions with NAA are synthesized in solid state and their characterization was done by chemical analysis. Electrical conductivity elemental analysis and spectral measurements (UV-visible FT-IR and H NMR) Magnetic susceptibility values have also been measured for the complexes synthesized.

🔴 **Ms. J. Therese Punitha-** "In-vitro antimicrobial Screening of Naphthalene acetic acid Compounds", Intl. Journal of Pharmacy & Life Sciences (Peer reviewed) http://www.ijplsjournal.com/, IF: 0.322, IC-V: 3.75, Vol. 1(5), Page No.52-58, 2013.

Abstract:

Naphthalene acetic acid complexes have been prepared and characterized by elemental analysis, H NMR and UV-Visible spectra and electro chemical measurements. The anti microbial properties of these compounds have been evaluated against the test strains (A. Niger, St. aureus-Streptococcus aureus) and thus a significant use of such compounds as antibacterial agent is reported. The biological activity data show that the present compounds are founds to have greater antibacterial and anti fungal activity than the respective standards.

P.G & Research Department of Computer science, Information Technology & Computer Application

Abstract:

In speech processing gender clustering and classification is the most outstanding and challenging task. In both gender clustering and classification, one the most vital processes carried out is the selection of features. In speech processing, pitch is the most often used features for gender clustering and classification. It is essential to note that compared to a female speech the pitch value of a male speech is much different. Also, in terms of frequency there is a considerable dissimilarity between the male and female speech. In some situation, either the frequency of male is almost same as female or the frequency of female is same as male. It is difficult to find out the exact gender in such conditions. This paper focus on rectifying these practices obstacles by extracting three significant features, namely, energy entropy, zero crossing rate, and short time energy. Gender clustering is performed based on these features. However, by means of Euclidean distance, mahalanobic distance, Manhattan distance, & Bhattacharya distance methods the clustering performance is analyzed. Using fuzzy logic, neural network, hybrid Neuro-fuzzy and support vector machine the gender classification is done. A benchmark dataset and real-time dataset is used for testing to make sure the reliability of the performance. The test results show the performance of various technique s and distance algorithms for different datasets.

Abstract:

Looking for rare variations of genetic codes between intra or inter DNA sequences is an important activity in the quest for disease identification and other related explorations. Such experiments may reveal information about variations in regular molecular structures. For the analysis of multitude of genetic sequences, neural networks can be used as tools. Providing suitably preprocessed input data to the networks may serve as a critical factor in the cognitive ability and processing power of the networks. Hence, and attempt has been made in this direction to construct an artificial neural networks with the support of numerically characterized input data sets and the results are provided. It is found that the network is capable of rapid cognition and as well gives relatively better detection performance of the different network architectures are also compared.

🔴 **Ms. P. Gayathri and Dr. K.R. Subramanian-** "Non-Newtonian Casson Fluid Flow through a Stenosis in Catheterized Tapered Artery ", International Journal of Mathematics Computer Science and Information Technology, (Peer Reviewed) IF: 1.125 http//www.serialpublication.com/, ISSN=0974-5580 Vol5 (2) Page No: 103-111 July-Dec 2012.

Abstract:

The problem of blood flow through a mild stenosis during tapered artery catheterization assuming blood to behave like a non-Newtonian Casson fluid has been investigated. The analytical expression for the blood flow characteristics, namely the flow rate and frictional resistance has been derived. The variation of single fluid model frictional resistance Λ for t he catheter ratio K= 0.3, 0.2, 0.1, pressure gradient P=2 and 3, the various yield stress τ= 0.1, 0.15 and 0.2 and also for the Angle of tapering α= 0.01, 0.03 and 0.05 have been calculated. The variations of the frictional resistance for the above parameters are shown graphically.

🔴 **Dr. K. Meena, Ms. P. Gayathri, and Dr. K.R.Subramanian-** "Mathematical Investigation for Blood Flow through catheterized tapered artery", International Journal of Mathematics

and Engineering with Computer (Peer Reviewed) www.serialpublication.com, ISSN: 2230-8911, Vol. 3(2), Page No: 117-131 Dec 2012.

Abstract:

This paper deals with the study of blood flow through a catheterized tapered artery with mild stenosis. A system of non-linear partial differential equations for blood flow of the artery was obtained. The governing equations are solved using calculus method. The frictional resistances for the artery are calculated for various parameters and the results are analyzed graphically.

⚫ **Dr. K. Meena, Ms. P. Gayathri, Dr. M.A. Gopalan, and K.R Subramanian-** "Estimation of Blood Flow characteristic frictional Resistance through a Catheterized Tapered Artery with Stenosis using two Fluid Non- Newtonian Model", Indian Journal of Science, Discovery, (Peer Reviewed) http://www.discovery.org.in/, ISSN 2278-5485, Vol. 1(2), Page No. 95-104, Dec 2012.

Abstract:

This paper deals with the study of blood flow through a catheterized frictional tapered artery with mild stenosis. A system of non-linear partial differential equations for blood flow of the artery was obtained. The governing equations are solved using calculus method. The frictional resistances for the artery are calculated for various parameters and the results are analyzed graphically.

⚫ **Dr. K. Meena, Ms. P. Gayathri, and Dr. K.R.Subramanian-** "A Non-Newtonian Herschel-Bulkeley Model for the Blood Flow through a Catheterized Tapered Artery ", International Journal of Current Research (Peer Reviewed) http//www.journal/.com, IF: 1.125, ISSN 0975-833x, Vol. 5 (6), Page No.1473-1483, June 2013.

Abstract:

The steady flow of through a catheterized tapered artery with a stenosis is analyzed, assuming the blood as a non-Newtonian Herschel-Bulkley fluid. A system of non-linear partial differential equations for blood of the artery was obtained. The governing equations are

solved using calculus method. The width of the plug flow region increases with the increase of the yield stress, and the reverse of behavior is notice when the steady state pressure gradient increases when all the other parameters are kept fixed. It is observed that the velocity and flow rate decrease with the wall shear stress and resistance to flow increase when the yield stress or catheter radius ratio or angle of tapering increases while all the other parameters held fixed.

Department of Management Studies

Abstract:

The management has top recognize the important role of human Resource Department in order to successfully steer organizations towards profitability. It is necessary for the management to invest considerable time and amount, to learn the changing scenario of the HR department in the 21st century. In order to survive the competition and be in the race, HR department should consciously update itself with the transformation in HR and be aware of the HR issues cropping up. With high attrition rates, poaching strategies of competitors, there is a huge shortage of skilled employees and hence, a company's HR activities play a vital role in combating this crisis. Suitable HR policies that would lead to the achievement of the organization as well as the individual's goals should be formulated. HR managers have to manage all the challenges that they would face from recruiting employees, to training them, and then developing strategies for retaining them and building up an effective career management system for them. Just taking care of employees would not be enough; new HR initiatives should also focus on the quality needs, customer-orientation, productivity and stress, team work and leadership building., HR managers will have to accommodate employees in their virtual work locations and find ways to manage corporate culture, socialization and employee orientation. In order to obtain and maintain a competent workforce, they must acts as organizational performance experts and shape employees behavior with our organizations must take into account cultural differences that shape managerial attitudes, when developing multinational management programs.

Department of Mathematics

● **Dr. M. A. Gopalan, Dr. S. Vidhyalakshmi, MS. T.R. Usharani**- "On the cubic equation with five unknowns $x^3 + y^3 = z^3 + w^3 + t^2(x + y)$ ", Indian Journal of Science http://www.discovery.org.in /ijs/Reviewers.html, ISSN 2319-7730 E-ISSN 2319-7749, Vol. 1(1), Page No.17-20, Nov 2012.

Abstract:

The cubic equation $x^3 + y^3 = z^3 + w^3 + t^2(x + y)$ is analyzed for its non-zero integral solutions. Three different patterns of solutions are illustrated. A few properties among the solutions are presented.

● **Dr. M.A. Gopalan, Dr. S. Vidhyalakshmi and Ms. S. Mallika**- "Observation on Cubic Equation with four Unknowns$2(x^3 + y^3) = z^3 + w^3(x + y)$", International Journal of Applied Mathematics and Physics, **ISSN:** 0974-8059, http://serialsjournals.com/, Vol. 4(2), Page No.103-107, July-Dec2012.

Abstract:

The cubic Diophantine equation with four unknowns $2(x^3 + y^3) = z^3 + w^3(x + y)$ is analyzed for its patterns infinitely many non-zero distinct integral solutions. A few interesting properties among the solutions are presented.

● **Dr. M.A. Gopalan, Dr. S. Vidhyalakshmi and Ms. S. Mallika**- "Integral Points of the Cubic equation with five unknowns $x^3 + y^3 = z^3 + w^3$+(x+y)+6(x+y)+6t^2", American Journal of Applied Mathematics and Mathematical Science, ISSN: 2278-9707, Vol. 2(1), Page No. 31-35, Jan-June 2013.

Abstract:

The cubic Diophantine equation with five unknowns $x^3 + y^3 = z^3 + w^3 + (x + y) + 6(x + y) + 6t^2$ is analyzed for its infinitely many non-zero distinct integral solutions. A few interesting properties among the solution are presented.

- **Dr. M.A. Gopalan, Dr. S. Vidhyalakshmi and Ms. K.Lakshmi-** "Integral Solution of the Biquadratic equation with six unknowns $x^2 + y^2 + z^4 = u^3 + v^4 + (z+v)w^2$", Global Journal of Pure & Applied Mathematics, ISSN: 0973-1768, Vol. 8(5), 2012, Page No.547-552.

Abstract:

We obtain infinitely many non-zero integer sextuples (x,y,z,u,v,w,) satisfying the non-biquadratic equation with six unknowns $x^2 + y^2 + z^4 = u^3 + v^4 + (z+v)w^2$. Various interesting properties among the values of x,y,z,u,v and w are presented.

- **Dr. M. A. Gopalan, Dr. S. Vidhyalakshmi, MS. T.R. Usharani-** "Integral Point of Non-Homogeneous Cone $2z^2 + 4xy + 8x - 4z + 2 = 0$", Global Journal of Pure & Applied Mathematics, ISSN: 0972-9836, Vo. 2(1), Page No.61-67, 2012.

Abstract:

The ternary quadratic equation $2z^2 + 4xy + 8x - 4z + 2 = 0$ representing a non-homogeneous cone is analyzed for its non-zero distinct integral points on it. A few interesting properties among the solutions are presented.

- **Dr. M. A. Gopalan, Dr. S. Vidhyalakshmi, MS. T.R. Usharani and Ms. S. Mallika-** "Observations on Hyperbolic paraboliod $4x^2 - y^2 - z^2 + 2yz + 3x - 4y + 8z - 2 = 0$ ", RETELL, St, Joseph College, ISSN: 0973-404 Vol. 13(1), Page No. 85-86, 2012.

Abstract:

The ternary quadratic equation $4x^2 - y^2 - z^2 + 2yz + 3x - 4y + 8z - 2 = 0$ represented a hyperbolic paraboloid is analyzed for its non-zero distinct integral points on it. Employing the integral solutions of the above equation. A few interesting relations between special polygonal and pyramidal numbers are exhibited.

- **Dr. M. A. Gopalan, Dr. S. Vidhyalakshmi, Ms. S. Mallika-** "Observation on cubic equation with four unknowns $xy + 2z^2 = w^3$", Global Journal of Pure & Applied Mathematics, ISSN: 0972-9836 Vol. 2(1), Page No. 69-74, 2012.

Abstract:

The cubic Diophantine equation with four unknowns $xy + 2z^2 = w^3$ is analyzed for its infinitely many non-zero distinct integral solutions. A few interesting properties among the solutions are presented.

● **Dr. M.A. Gopalan, Dr. S. Vidhyalakshmi and Ms. K.Lakshmi-** "On the Non Homogeneous Quadratic Equation $x^2 + y^2 + z^2 = t^2 - 1$ ", nternational Journal of Applied Mathematical Science, ISSN: 0973-0176, Vol. 6(1), Page No.1-6, 2013.

Abstract:

We obtain infinitely many non-zero integer quintuples (x,y,z,w,T) satisfying the non-homogeneous quadratic equation with four unknowns $x^2 + y^2 + z^2 = t^2 - 1$. Various interesting properties among the values of x,y,z,w and t are presented.

● **Dr. M.A. Gopalan, Dr. S. Vidhyalakshmi and Ms. K.Lakshmi-** "On the Non Homogeneous Quadratic Equation $x^2 + y^2 + z^2 = t^2 + 1$ ", American Journal of Mathematical Sciences and Application, ISSN: 2321-497X, Vol. 1(1), Page No.77-85, Jan-June 2013.

Abstract:

We obtain infinitely many non-zero integer quintuples (x,y,z,w,T) satisfying the non-homogeneous quadratic equation with four unknowns $x^2 + y^2 + z^2 = t^2 + 1$. Various interesting properties among the values of x,y,z,w and t are presented.

● **Dr. M.A. Gopalan, Dr. S. Vidhyalakshmi and Ms. G. Sumathi -** "On the homogeneous cubic equation with four unknowns$(X^3 + Y^3 = 14Z^3 - 3W^2(X + Y))$", Discovery Journal, ISSN: 2278-5450, Vol. 2(4), Page No.37-39, and Oct 2012.

Abstract:

The homogeneous cubic equation with four unknowns represented by the Diophantine equation $(X^3 + Y^3 = 14Z^3 - 3W^2(X + Y))$ is analyzed for its patterns of non-zero distinct integral solutions. A few interesting relations between the solutions and special numbers are exhibited.

● **Dr. M.A. Gopalan, Dr. S. Vidhyalakshmi and Ms. G. Sumathi** - "Integral Solution of ternary bi-quadratic Non-Homogeneous Equation $(\alpha + 1)(x^2 + y^2) - (2\alpha + 1)xy = z^4$", Journal of American Research Centre in Egypthttp://www.arce.org,/main/about/historyandmission, ISSN 0065-9991, Vol. 6(2) Page No.97-98, July-Dec 2012.

Abstract:

The ternary bi-quadratic non-homogeneous equation represented by the Diophantine equation $(\alpha + 1)(x^2 + y^2) - (2\alpha + 1)xy = z^4$ is analyzed for its patterns of non-zero distinct integral solutions. A few interesting relations between the solutions and special numbers are exhibited.

● **Dr. M.A. Gopalan, Dr. S. Vidhyalakshmi and Ms. G. Sumathi** - "Integral Solutions of the Non-Homogeneous Ternary Quintic Equation in terms of Pell Sequence $x^3 + y^3 - xy(x + y) = 2z^5$", International Journal of Applied Mathematical Science www.ripublication.com/jams.html, ISSN 0973-0176, Vol. 6(1), 2013, Page No. 59-62.

Abstract:

The non-homogenous ternary quintic equation in terms of Pell sequence represented by the Diophantine equation $x^3 + y^3 - xy(x + y) = 2z^5$ is analyzed for its non-zero distinct integral solution and they are expressed in terms of Pell sequence. A few interesting relations between the solutions, Pell sequence and Pell – Lucas sequence are exhibited.

● **Dr. M.A. Gopalan, Dr. S. Vidhyalakshmi and Ms. G. Sumathi** - "Lattice points on the elliptic paraboloid $9x^2 + 4y^2 = z$ ", Advance in Theoretical and Applied Mathematics www.ripublications.com/atam.html, ISSN 0973-4554, Vol. 7(4), Page No.379-38, 2012.

Abstract:

The elliptic paraboloid represented by the ternary quadratic Diophantine equation $9x^2 + 4y^2 = z$, is analyzed for its pattern of non-zero distinct integral solutions. A few interesting relations between the solutions and special polygonal numbers are exhibited.

🔴 **Dr. M.A. Gopalan, Dr. S. Vidhyalakshmi and Ms. G. Sumathi** - "On the transcendental Equation with five unknowns", Global Journal of Mathematics and Mathematical Sciences www.ripublications.com/gjmms.html, ISSN: 0972-9836, Vol 3(2), 2013, Page No.63-66.

Abstract:

The transcendental equation with five unknowns represented by the Diophantine equation $3\sqrt[3]{x^2+y^2} - 2\sqrt[4]{X^2+Y^2} = (r^2+s^2)z^6$ is analyzed for its patterns on non-zero distinct integral solutions and two different methods of integral solutions are illustrated.

🔴 **Dr. S. Vidhyalakshmi, Dr. M.A. Gopalan, and Ms. A. kavitha**- "An Exclusive transcendental equation $\sqrt[2]{y^2+2x^2} + 2\sqrt[3]{X^2+Y^2} = (k^2+3)^n z^2$ ", International Journal of Pure and Applied Mathematical Sciences www.ripublication.com/ijpams.html, ISSN: 0972-9828, Vol.6 (4), Page 305-311, 2013.

Abstract:

The transcendental equation with five unknowns represented by the Diophantine equation $\sqrt[2]{y^2+2x^2} + 2\sqrt[3]{X^2+Y^2} = (k^2+3)^n z^2$ is analyzed for its patterns of non-zero distinct integral solutions and two different methods of integral solutions are illustrated.

🔴 **Dr. M.A. Gopalan, Dr. S. Vidhyalakshmi and Ms. K.Lakshmi**- "Observations on the non-homogeneous Quintic equation with four unknowns", International Journal of Mathematics Research http://www.irphouse.com, ISSN: 0976-5840, Vol.5 (1), Page No.127-133, 2013.

Abstract:

We obtain infinitely many non-zero integer triples (x,y,z) satisfying the ternary quintic equation $ax^2 + by^2 = (a+b)z^5, a, b > 0$. Various interesting relations between the solutions and special numbers, namely polygonal numbers pyramidal numbers, Jacobsthal numbers, Jacobsthal-Lucas Numbers, Four Dimensional Figurative numbers and five dimensional Figurative numbers are exhibited.

● **Dr. M.A. Gopalan, Dr. S. Vidhyalakshmi and Ms. G. Sumathi -** "On the non-homogeneous cubic equation with three unknowns $x^3 + y^3 = 14z^3 + 3(x + y)$", Journal of Mathematical Science- Discovery Science, ISSN-2278-5485, Vol. 2(4) Page No. 37-39, Oct 2012.

Abstract:

Te non-homogeneous cubic equation with three unknowns represented by the Diophantine equation $x^3 + y^3 = 14z^3 + 3(x + y)$ is analyzed for the patterns of the non-zero distinct integral solutions. A few interesting relations between the solutions and special numbers are exhibited.

● **Dr. M.A. Gopalan, Dr. S. Vidhyalakshmi and Ms. K.Lakshmi-** "Integral Points on the Hyperboloid of two sheets $3y^2 = 7x^2 - z^2 + 21$", Diaphanous J.Math (Peer Reviewed) www.domainsmoon.com, ISSN: 2278-1714, Vol.1 (2), Page No.99-107, and July, 2012.

Abstract:

Infinitely many non-zero integral points on the hyperboloid of two sheets given by $3y^2 = 7x^2 - z^2 + 21$ are obtained. A few interesting properties among the solutions are presented.

● **Dr. M.A. Gopalan, Dr. S. Vidhyalakshmi and Ms. K.Lakshmi-** "Integral Solution of Sextic Equation with five unknowns $x^3 + y^3 = z^3 + w^3 + 3(x + y)t^5$", International Journal of Engineering Sciences & Research Technology (Peer Reviewed) http://www.ijesrt.com/, ISSN: 2277-9655, Vol. 1 (10), Page No. 562-564, Nov 2012.

Abstract:

We obtain infinitely many non-zero integer quintuples (x,y,z,w,T) satisfying the non-homogeneous sextic equation with five unknowns $x^3 + y^3 = z^3 + w^3 + 3(x + y)t^5$. Various interesting properties among the values of x,y,z,w and T are presented.

● **Dr. M.A. Gopalan, Dr. S. Vidhyalakshmi and Ms. K.Lakshmi-** "Observation on the higher degree Diophantine equation $x^{4n} + y^{4n} = 2z^{2n} + w^2$ ", Indian Journal of Science (Peer

Abstract:

We obtain infinitely many non-zero integer quintuples (x,y,z,w) satisfying the non-homogeneous higher degree Diophantine equation $x^{4n} + y^{4n} = 2z^{2n} + w^2$. Various interesting properties among the values of x,y,z, and w are presented.

🔴 **Dr. M.A. Gopalan, Dr. S. Vidhyalakshmi and Ms. K.Lakshmi-** "On the biquadratic equation with four unknowns $x^2 + xy + y^2 = (z^2 + zw + w^2)^2$", International Journal of pure and applied mathematical Sciences (Peer Reviewed) http://www.gbspublisher.com, ISSN-0972-9828, Vol-5(1), Page No.73-77, Oct 2012.

Abstract:

We obtain infinitely many non-zero integer quintuples (x,y,z,w) satisfying the Bi-quadratic equation with four unknowns $x^2 + xy + y^2 = (z^2 + zw + w^2)^2$. Various interesting properties among the values of x,y,z, and w are presented.

🔴 **Dr. M.A. Gopalan, Dr. S. Vidhyalakshmi, Ms. K.Lakshmi, and Ms. G.Sumathi-** "Observation on $3x^2 + 10xy + 4y^2 - 4x$+2y-7=0", Diaphanous J.Math(Peer Reviewed)www.domainsmoon.com, ISSN:2278-1714, Vol.1(2), Page No. 123-125, July 2012.

Abstract:

The binary quadratic equation representing the hyperbola $3x^2 + 10xy + 4y^2 - 4x + 2y - 7 = 0$ has limited number of integral points on it.

🔴 **Dr. M. A. Gopalan, Dr. S. Vidhyalakshmi, Ms. S. Mallika-** "Observation on Hyperbolaoid of one sheet $x^2 + 2y^2 - z^2 = 2$", Bessel J.Maths (Peer Reviewed) ISSN: 2278-0858 Vol. II (3), Page No. 221-226, 2012.

Abstract:

The ternary quadratic equation $x^2 + 2y^2 - z^2 = 2$ representing a hyperboloid of one sheet is analyzed for its non-zero distinct integral points on it. Employing the integral solution of the above equation, A few interesting relations between special polygonal and pyramidal numbers are exhibited.

- **Dr. M. A. Gopalan, Dr. S. Vidhyalakshmi, MS. G. Sumathi-** "On the ternary biquadratic Non-homogeneous equation $(2k + 1)(x^2 + y^2 + xy) = z^4$ ", Indian Journal of Engineering, http://www.discovery.org.in/, ISSN 2319 − 7757   EISSN 2319 − 7765, (Peer Reviewed) Vol. 1(1), Page No. 37-40, November 2012.

Abstract:

The ternary bi-quadratic non-homogeneous equation represented by te Diophantine equations $(2k + 1)(x^2 + y^2 + xy) = z^4$ is analyzed for its patterns of non-zero distinct integral solutions. A few interesting relations between the solutions and special numbers are exhibited.

- **Dr. M. A. Gopalan, Dr. S. Vidhyalakshmi, MS. T.R. Usharani-** "Integral Solutions of the Homogeneous Cubic Equation $x^3 + y^3 + u^3 + v^3 = kt^3$", Bessel J.Maths (Peer Reviewed), ISSN: 2278-0858, Vol. III (1), Page No. 69-75, 2013.

Abstract:

The cubic equation $x^3 + y^3 + u^3 + v^3 = kt^3$ is analyzed for its non-zero integral solutions when (i) $k = 6\alpha^2$ and (ii) $k = 6\alpha, \alpha > 1$ and square free. Four different patterns of solutions are illustrated. A few properties among the solutions are presented.

- **Dr. M.A. Gopalan, Dr. S. Vidhyalakshmi and Ms. K.Lakshmi-** "Observations on the non-homogeneous Quintic equation with four unknowns $x^5 - y^5 = 2z^5 + 5(x + y)(x^2 - y^2)w^2$", International Journal of Engineering, Science and Mathematics (Peer Reviewed) http://www.ijmra.us/ijesm.php, ISSN: 2320-0294, Vol.2(2), Page No.40-45, June 2013.

Abstract:

We obtain infinitely many non-zero integer quintuples (x,y,z,w) satisfying the quintic equation with four unknowns $x^5 - y^5 = 2z^5 + 5(x + y)(x^2 - y^2)w^2$. Various interesting properties among the values of x,y,z, and w are presented.

● **Dr. M.A. Gopalan, Dr. S. Vidhyalakshmi and Ms. G. Sumathi** - "Integral solutions of $x^6 - y^6 = 4z[(x^4 + y^4) + 4(w^2 + 2)^2]$ in terms of generalized Fibonacci and Lucas sequences", Diophantus J.Math (Peer Reviewed) www.domainsmoon.com, ISSN:2278-1714, Vol. 2(2), Page No. 71-75, 2013.

Abstract:

We obtain infinitely many non-zero integer quadruples (x,y,z,w) satisfying the sextic non-homogeneous equation with four unknowns $x^6 - y^6 = 4z[(x^4 + y^4) + 4(w^2 + 2)^2]$. Various interesting properties among the values of x,y,z,w are presented.

● **Dr. M.A. Gopalan, Dr. S. Vidhyalakshmi and Ms. G. Sumathi** - "Integral solutions of ternary bi-quadratic non homogeneous equation$k + 1(x^2 + y^2) - (2k + 1)xy = z^4$", Archimedes J-Math (Peer Reviewed) www.domainsmoon.com, ISSN: 2278-084X   Vol. 3(1), Page No. 67-71, 2013.

Abstract:

The ternary biquadratic non-homogeneous equation represented by the Diophantine equation $k + 1(x^2 + y^2) - (2k + 1)xy = z^4$ is analyzed for its patterns of non-zero distinct integral solutions. A few interesting relations between the solutions and special numbers are exhibited.

● **Dr. M.A. Gopalan, Dr. S. Vidhyalakshmi and Ms. G. Sumathi** - Integral Solutions of non-homogeneous qintic Equation with three unknowns $x^2 + y^2 - xy + x + y + 1 = (k^2 + 3)^n z^5$ ", International Journal of Innovative Research in Science, Engineering and Technology, (Peer Reviewed), http://www.ijirset.com/, ISSN: 2319-8753, IF: 1.672, Vol. 2(4), Page No.920-925, April 2013.

Abstract:

The non-homogeneous bi-quadratic equation with four unknowns represented by the Diophantine equation $x^2 + y^2 - xy + x + y + 1 = (k^2 + 3)^n z^5$ is analyzed for its patterns of non-zero distinct integral solutions and three different methods of integral solutions are illustrated. Various interesting relations between the solutions and special numbers namely, polygonal numbers, pyramidal numbers, Jacobsthal numbers, Jacobsthal-Lucas, Pronic numbers, Stella octangular, octahedral numbers, Gnomonic numbers centered triangular numbers, generalized Fibonnacci and Lucas sequences are exhibited.

Abstract:

The non-homogeneous bi-quadratic equation with four unknowns represented by the Diophantine equation $x^3 + y^3 = (k^2 + 3)^n z^3 w$ is analyzed for its patterns of non-zero distinct integral solutions and three different methods of integral solutions are illustrated. Various interesting relations between the solutions and special numbers namely, polygonal numbers, pyramidal numbers, Jacobsthal numbers, Jacobsthal-Lucas, Pronic numbers, Stella octangular, octahedral numbers, Gnomonic numbers centered triangular numbers, generalized Fibonnacci and Lucas sequences are exhibited.

Abstract:

We obtain infinitely many non-zero integer triples (x,y,z,w) satisfying the non-quintic equations with four unknowns $x^5 - y^5 + (x^4 + y^4)z + 52w^4 z = 4z(1 + 7w^2)^2$. Various interesting properties among the values of x,y,z,w are presented.

● **Dr. M.A. Gopalan, Dr. S. Vidhyalakshmi and Ms. G. Sumathi -** "On the heptic non-homogeneous equation with four unknow $xy(x + y) + zw^6 = 0$ns ", International Journal of Engineersing Sciences & Research Technology (Peer Reviewed) http://www.ijesrt.com/, ISSN: 2277-9655, Vol. 2(5), Page No. 1313-1317, 2013.

Abstract:

The non-homogeneous bi-quadratinon-homogeneous equation with four unknowns represented by the Diophantine equation $xy(x + y) + zw^6 = 0$ is analyzed for its patterns of non-zero distinct integral solutions and three different methods of integral solutions are illustrated. Various interesting relations between the solutions and special numbers namely, polygonal numbers, pyramidal numbers, Pronic numbers, star numbers, Gnomonic numbers centered polygonal numbers, centered Hexagonal pyramidal numbers , Fourth Dimensional Numbers are exhibited.

● **Dr. M.A. Gopalan, Dr. S. Vidhyalakshmi and Ms. G. Sumathi -** "Integral Solutions of the Homogeneous Bi-Quadratic Equation with four unknowns", International Journal of pure and Applied Mathematical Sciences (Peer Reviewed) www.ripublication.com, ISSN 0972-9828, Vol. 6(3), Page No. 219-224, 2013.

Abstract:

The homogenous biquadratic equation with four unknowns represented by the Diophantine equation $x^4 - y^4 = 2^{2n-3}w$ is analyzed for it patterns of non-zero distinct integral solutions and three different methods of integral solutions are illustrated. Various interesting relations between the solutions and the Special numbers, namely, polygonal numbers, pyramidal numbers, Jaconbsthal lucas, numbers, pronic numbers, star numbers, Octahedral numbers, Gnomonic numbers, centered triangular pyramidal numbers, centered Hexogonal Pyramidal Numbers, centered polygonal numbers are exhibited.

● **Dr. M.A. Gopalan, Dr. S. Vidhyalakshmi and Ms. G. Sumathi -** "Lattice points of non-homogeneous biquadratic equation with four unknowns $x^4 - y^4 = 3z(x^3 + y^3) + w$", International Journal of Latest Research in Science & Technology (Peer Reviewed)

Abstract:

The bi-quadratic non-homogeneous equation with four unknowns represented by the Diophantine equation $x^4 - y^4 = 3z(x^3 + y^3) + w$ is analyzed for its patterns of non-zero distinct integral solutions. Two different patterns of non-zero distinct integral solution to the above bi-quadratic equations are presented. A few numerical solutions are also given in tabular forms. A few interesting relations between the solutions are exhibited. The recurrence relations for x,y,z and W are presented.

● **Dr. M.A. Gopalan, Dr. S. Vidhyalakshmi and Ms. G. Sumathi -** "On the non-homogeneous quintic equation with five unknowns $x^3 + y^3 = z^3 + w^3 + 6t^5$ ", International Journal of Management, IT and Engineering (Peer Reviewed), I.C=5.09IN, 2011 http://www.ijmra.us, ISSN 2249-0558, Vol. 3(4), Page No. 501-506, Apr 2013.

Abstract:

The non-homogeneous quintic equation with five unknowns represented by $x^3 + y^3 = z^3 + w^3 + 6t^5$ is considered. Three different patterns of infinitely many non-zero integral solutions of the above the quintic equations are presented. Various interesting relations between the solutions and special numbers patterns, namely, polygonal numbers, star numbers, centered numbers, Jacobsthal numbers, jacobsthal laucas ymbers and jacobsthal numbers are exhibited.

● **Dr. S. Vidhyalakshmi, Dr. M.A. Gopalan, and Ms. A. kavitha-** "Observations on the ternary cubic equation $x^2 - xy + y^2 = 7z^3$", International Journal of Computational Engineering Research (Peer Reviewed) http://www.ijceronline.com/, ISSN: 2250-3005 Vol.3 (5), Page No.17-22, and May 2013.

Abstract:

The non-homogeneous cubic equation with three unknowns represented by the Diophantine equation $x^2 - xy + y^2 = 7z^3$ is analyzed for its patterns of non-zero distinct

integral solutions. A few interesting relations between the solutions and special numbers are exhibited.

- **Dr. S. Vidhyalakshmi, Dr. M.A. Gopalan, and Ms. A. kavitha-** "Observations on the non-homogeneous sextic equation with four unknowns $x^3 + y^3 = 2(k^2 + 3)z^5w$ ", International Journal of Innovative Research in Science, Engineering and Technology (Peer Reviewed) http://www.ijirset.com, IF: 1.672 ISSN: 2319-8753 Vol.2 (5), Page No .1301-1307, May 2013.

Abstract:

The sextic non-homogenous equation with four unknowns represented by the Diophantine equation $x^3 + y^3 = 2(k^2 + 3)z^5w$ is analyzed for its patterns of non-zero distinct integral solutions are illustrated. Various interesting relations between the solutions and special numbers, namely, polygonal numbers, pyramidal numbers, Jacobsthal Numbers, Jacobsthal- Lucas numbers, Pronic numbers, star numbers are exhibited.

- **Dr. S. Vidhyalakshmi, Dr. M.A. Gopalan, and Ms. A. kavitha-"** Observations on Homogenous Cubic Equation with four unknowns $X^3 + Y^3 = 7^{2n} ZW^2$ ", International Journal of Modern Engineering Research (IJMER) **(Peer reviewed)** http://www.ijmer.com/, ISSN: 2249-6645 Vol.3 (3) Page No.1487-1492, May-June 2013.

Abstract:

The homogenous cubic equation with three unknowns represented by the Diophantine equation $X^3 + Y^3 = 7^{2n} ZW^2$ is analyzed for its patterns of non-zero distinct integral solutions. A few interesting relations between the solutions, and special numbers are exhibited.

- **Dr. S. Vidhyalakshmi, Dr. M.A. Gopalan, and Ms. A. kavitha-** "Observations on the hyperboloid of two sheets $7x^2 - 3y^2 = z^2 + z(y - x) + 4$ ", International Journal of Latest Research in Science & Technology (Peer Reviewed) http://www.mnkjournals.com/ijlrst.html, ISSN: 2278-5299, Vol.2 (2) , Page No.84-86, Mar-Apr 2013.

Abstract:

Infinitely many non-zero distinct integral points on the hyperboloid of two sheets given by $7x^2 - 3y^2 = z^2 + z(y - x) + 4$ are obtained. A few interesting properties among the solutions are presented.

🔴 **Dr. S. Vidhyalakshmi, Dr. M.A. Gopalan, and Ms. A. kavitha-** "Integral Points on the homogeneous cone $z^2 = 2x^2 - 7y^2$ ", Diaphanous J.Math (Peer Reviewed) www.domainsmoon.com, ISSN:2278-1714 Vol.1(2), Page 127-136, July 2012.

Abstract:

The homogeneous cone represented by the ternary quadratic Diophantine equation $z^2 = 2x^2 - 7y^2$ is analyzed for its patterns of non-zero distinct integral solutions. A few interesting relations between the solutions and special polygonal numbers are exhibited.

🔴 **Dr. S. Vidhyalakshmi, Dr. M.A. Gopalan, and Ms. A. kavitha-** "Observations on the hyperbola $10y^2 - 3x^2 = 13$ ", Archimedes J-Math (Peer Reviewed) www.domainsmoon.com, ISSN: 2278-084X Vol. 3(1), 2013, Page No. 31-34.

Abstract:

Knowing an integral point on the hyperbola $10y^2 - 3x^2 = 13$ a process of generating sequence of integral points based on the known solution of the hyperbola is illustrated. A few interesting properties among the solutions are presented. Employing te solutions of the given hyperbola, a typical pattern of Pythagorean triangle is obtained.

🔴 **Dr. S. Vidhyalakshmi, Dr. M.A. Gopalan, Ms. A. Premalatha, and Ms. A. kavitha-** "On the quintic equation with five unknowns $[x^3 - y^3 = z^3 - w^3 + 6t^2]$", International Journal of Current Research (Peer Reviewed) http://www.journalcra.com/ ISSN: 0975-833X Vol. 5(6), Page No. 1437-1440, June 2013.

Abstract:

We obtain infinitely many non-zero integer quintuples (x,y,z,w,t) satisfying the quintic equation with five unknowns $[x^3 - y^3 = z^3 - w^3 + 6t^2]$. Various interesting properties between the values of x,y,z,w,t and special polygonal and pyramidal numbers are presented.

⬤ **Dr. S. Vidhyalakshmi, Dr. M.A. Gopalan, and Ms. A. kavitha-** "Observations on the biquadratic with five unknowns $x^4 - y^4 - 2xy(x^2 - y^2) = z(x^2 + y^2)$", International Journal of Engineering, Science and Mathematics (Peer Reviewed) http://www.ijmra.us/ijesm.php, ISSN: 2320-0294, Vol. 2(2), Page No. 192-200, June2013.

Abstract:

We obtain infinitely many non-zero integer quintuples (x,y,z,X,Y) satisfying the Bi-quadratic equation with five unknowns $x^4 - y^4 - 2xy(x^2 - y^2) = z(x^2 + y^2)$. Various interesting properties between the values of x,y,z,X,Y and special numbers patterns namely, polygonal and Centered pyramidal numbers, Jacob-Lucas numbers Kyenea numbers are presented.

⬤ **Dr. S. Vidhyalakshmi, Dr. M.A. Gopalan, and Ms. A. kavitha-** "Observation on Hyperbola $ax^2 - (a + 1)y^2 = 3a - 1$ ", Discovery, (Peer Reviewed) http://www.discovery.org.in/, ISSN 2278-5485, Vol. 4(10), Page No. 22-24, April 2013.

Abstract:

Knowing an integral point on the hyperbola $ax^2 - (a + 1)y^2 = 3a - 1$ a process of generating sequence of integral points based on the known solution of the hyperbola is illustrated. A few interesting properties among the solutions are presented.

⬤ **Dr. M.A. Gopalan, Dr. S. Vidhyalakshmi and Ms. S. Mallika-** "Integral Solutions of $2(x^2 + y^2) + 3xy = (\alpha^2 + 7)^n z^4$ ", International Journal of Management, IT and Engineering (Peer Reviewed) http://www.ijmra.us/itjournal.php, ISSN: 2249-0558, Vol.3 (5), Page No: 408-414, May 2013.

Abstract:

The non-homogeneous quadratic equation with three unknowns represented $2(x^2 + y^2) + 3xy = (\alpha^2 + 7)^n z^4$ is analyzed for finding its non-zero distinct integral solutions. Two different methods have been presented for determining the integral solutions of the ternary non-homogenous bi-quadratic equation under consideration. The recurrence relation satisfied by the values of x and y are of degree four with three unknowns are

exhibited. Knowing an integer solution of the given equation, triples of non-zero distinct integer generating an presented. A few interesting relations among the solutions of the considered non-homogeneous Diophantine equation infinite number of integer solution for add ordered and even ordered solutions satisfying the given equation are presented respectively.

🔴 **Dr. M.A. Gopalan, Dr. S. Vidhyalakshmi and Ms. S. Mallika-** "Observations on the non-homogeneous quintic equation with five unknowns $x^4 - y^4 = 2(k^2 + s^2)(z^2 - w^2)p^3$ ", Journal of Innovative Research in Science, Engineering and Technology (Peer Reviewed) http://www.ijirset.com, IF:1.672 ISSN:2319-8753, Vol.2(4), Page No. 1216-1221, Apr 2013.

Abstract:

The quintic Diophantine equation with five unknowns $x^4 - y^4 = 2(k^2 + s^2)(z^2 - w^2)p^3$ is analyzed for its infinitely many non-zero distinct integral solutions. A few interesting relations between the solutions special numbers namely polygonal numbers and pyramidal numbers, Jacobsthal Numbers, and Keynea numbers are presented.

🔴 **Dr. M.A. Gopalan, Dr. S. Vidhyalakshmi and Ms. S. Mallika-** "On the transcendental equation $\sqrt[3]{(x^2 + y^2)} + \sqrt[3]{z^2 + w^2} = 2(k^2 + s^2)R^5$ ", International Journal of Modern Engineering Research (Peer Reviewed) http://www.ijmer.com/, ISSN: 2249-6645, Vol.3 (3), Page No.1501-1503, May-June 2013.

Abstract:

The transcendental equation with five unknowns given by $\sqrt[3]{(x^2 + y^2)} + \sqrt[3]{z^2 + w^2} = 2(k^2 + s^2)R^5$ analyzed for its infinitely many non-zero integral solutions.

🔴 **Dr. M.A. Gopalan, Dr. S. Vidhyalakshmi and Ms. S. Mallika-** "Integral Point on the Cubic equation with five unknowns $x^3 + y^3 = z^3 + w^3 + 6t^2$ ", Diaphanous J.Math (Peer Reviewed) www.domainsmoon.com, ISSN: 2278-1714 Vol.2 (1), Page No. 39-46, 2013.

Abstract:

The cubic Diophantine equation with five unknowns $x^3 + y^3 = z^3 + w^3 + 6t^2$ is analyzed for its infinitely many non-zero distinct integral solutions. A few interesting relation between the solutions and special numbers namely, polygonal numbers nad pyramidal numbers are presented.

🔴 **Dr. M.A. Gopalan, Dr. S. Vidhyalakshmi and Ms. K.Lakshmi-** "Lattice points on the elliptic paraboloid $16y^2 + 9z^2 = 4x$ ", Bessel J.Maths(Peer Reviewed) www.domainsmoon.com, ISSN:2278-0858 Vol. III(2), Page No. 137-145, 2013.

Abstract:

Infinitely many non-zero integral points on the elliptic paraboloid given by $16y^2 + 9z^2 = 4x$ are obtained. A few interesting properties between the solutions and special number patterns are presented.

🔴 **Dr. M.A. Gopalan, Dr. S. Vidhyalakshmi and Ms. K.Lakshmi-** "Integral solutions of the non homogeneous ternary quintic equation $ax^2 - by^2 = (a - b) z^5, a, b > 0$ ",Archimedes J-Math(Peer Reviewed) www.domainsmoon.com, ISSN:2278-084X, Vol. 3(2), Page No. 197-204, 2013.

Abstract:

We obtain infinitely many non-zero integer triples (x,y,z) satisfying the ternary quintic equation $ax^2 - by^2 = (a - b) z^5, a, b > 0$. Various interesting relations between the solutions and special numbers, namely polygonal numbers pyramidal numbers, Jacobsthal numbers, Jacobsthal-Lucas Numbers, Four Dimensional Figurative numbers and five dimensional Figurative numbers are exhibited.

🔴 **Dr. M.A. Gopalan, Dr. S. Vidhyalakshmi and Ms. K.Lakshmi-** "Integral solution of the non-homogeneous heptic equation in terms of the generalized Fibonacci and lucas sequences$x^5 + y^5 - (x^3 + y^3)xy - 4z^2w = 3(p^2 - t^2)2w^3$", International Journal of Modern Engineering Research (Peer Reviewed) http://www.ijmer.com/, ISSN: 2249-6645 Vol. 3(3), Page No. 1424-1427, May-June 2013.

Abstract:

We obtain infinitely many non-zero integer triples sextuples (x,y,z,w,p,T) satisfying the non-homogeneous equation of degree seven with six unknowns given by $x^5 + y^5 - (x^3 + y^3)xy - 4z^2w = 3(p^2 - t^2)2w^3$. The solutions are obtained in terms of the generalized Fibonacci and Lucas sequences. Recurrence relations for the variable are given. Various interesting relations between the solutions and special numbers, namely polygonal numbers pyramidal numbers, centered hexaconal pyramidal numbers, Four Dimensional Figurative numbers and five dimensional Figurative numbers are presented.

⬤ **Dr. M. A. Gopalan, Dr. S. Vidhyalakshmi, MS. T.R. Usharani-** "Integral points on the Homogeneous cone $6z^2 + 3y^2 - 2x^2 = 0$ ", Impact Journal of Science and Technology, ISSN: 1728- 8163, Vol. 6(1), Page No. 7-13, 2012.

Abstract:

The ternary quadratic equation $6z^2 + 3y^2 - 2x^2 = 0$ representing a homogeneous cone is analyzed for its non-zero distinct integral points on it. Employing the integral solutions of the above equations. A few interesting relations between the special polygonal and pyramidal numbers are exhibited. Also, a general formula for generating an identify many integral points on each of the xy, yz, zx planes is presented.

⬤ **Dr. M. A. Gopalan, Dr. S. Vidhyalakshmi, MS. T.R. Usharani-** "Observation on the Non-homogeneous biquadratic equation with four unknowns", International Journal of Mathematical Research http://www.ripublication.com, /irph/ijmr.html, ISSN: 0976-5840 Vol.5 (1), Page No.135-140, 2013.

Abstract:

We obtain infinitely many non-zero integer quadruples (x,y,z,w) satisfying the bi-quadratic equation with four unknowns $8(x^3 + y^3) = (1 + 3k^2)^n z^3 w$.. various interesting relations between the solutions and special numbers, namely polygonal numbers pyramidal numbers, Jacobsthal numbers, Jacobsthal-Lucas Numbers are obtained.

🔴 **Dr. M. A. Gopalan, Dr. S. Vidhyalakshmi, MS. T.R. Usharani-** "Integral solution of the biquadratic equation", International Journal of Computational Engineering Research (Peer Reviewed) http://www.ijceronline.com/, ISSN: 2250-3005, Vol.3 (5), Page No.28-31, May 2013 .

Abstract:

We obtain infinitely many non-zero integer quadruples (x,y,z,w) satisfying the bi-quadratic equation with four unknowns $x^4 - y^4 = (k^2 + 1)(z^2 - w^2)$ various interesting relations between the solutions and special numbers, namely polygonal numbers pyramidal numbers, centered pyramidal Numbers are obtained.

🔴 **Dr. M. A. Gopalan, Dr. S. Vidhyalakshmi, MS. T.R. Usharani-** "Integral Solutions of Non-homogeneous ternary cubic equation $ax^2 + by^2 = (a + b)z^3$", Diophantus J.Math (Peer Reviewed) www.domainsmoon.com, ISSN: 2278-1714, Vol. 2(1), Page No. 31-38, 2013.

Abstract:

The ternary cubic equation $ax^2 + by^2 = (a + b)z^3$ is analyzed for its non-zero integral solutions, when a and b are of same parity and of different parity Five different patterns of solutions are discussed. Some interesting relations between the solutions, special polygonal numbers and pyramidal numbers are exhibited.

🔴 **Dr. M.A. Gopalan, Dr. S. Vidhyalakshmi and Ms. K.Lakshmi-** "On the Non-homogeneous equation of eighth degree with Six unknowns $x^5 - y^5 + (x^3 - y^3)xy = p(z^2 - w^2)^2 T^3$ ", International Journal of Engineering Science and Research Technology, ISSN: 2277-9655, Impact Factor: 1.76, http://www.ijert.org/, Vol2(5), Page No.1218-1223, May 2013.

Abstract:

We obtain infinitely many non-zero integer triples (x,y,z) satisfying the ternary quintic equation $x^5 - y^5 + (x^3 - y^3)xy = p(z^2 - w^2)^2 T^3$. Various interesting relations between the solutions and special numbers, namely polygonal numbers pyramidal numbers, star numbers, stella octangular numbers, octahedral numbers, pronic numbers, Jacobsthal numbers, Jacobsthal-Lucas Numbers, Four numbers are exhibited.

⚫ **Dr. M.A. Gopalan, Dr. S. Vidhyalakshmi and Ms. K.Lakshmi-** "Observation on the Non-homogeneous equation of eighth degree with Five unknowns $x^4 - y^4 = (k^2 + s^2)(z^2 - w^2)p^6$", International Journal of Innovative Research in Science, Engineering and Technology, http://www.ijirset.com/, ISSN: 2319- 8753, Impact factor: 1.672, Vol. 2(5), Page No.1789-1798, May 2013.

Abstract:

We obtain infinitely many non-zero integer quintuples (x,y,z,w,p) satisfying the non-homogeneous equation of degree eight with five unknowns given $x^4 - y^4 = (k^2 + s^2)(z^2 - w^2)p^6$. Various interesting relations between the solutions and special numbers, namely polygonal numbers pyramidal numbers, star numbers, stella octangular numbers, octahedral numbers, Four Dimensional Figurative Numbers, Five Dimensional Figurative Numbers and six Dimensional Numbers are exhibited.

⚫ **Dr. M.A. Gopalan, Dr. S. Vidhyalakshmi and Ms. K.Lakshmi-** "Lattice Points on the Non-Homogeneous Cubic Equation $x^3 + y^3 + z^3 - (x + y + z) = 0$", Impact Journal of Science and Technology ISSN: 0973-8290, Vol. 7(1), Page No. 51-55, 2013.

Abstract:

We obtain infinitely many non-zero integer triples (x,y,z) satisfying the non-homogeneous cubic equation with three unknowns $x^3 + y^3 + z^3 - (x + y + z) = 0$. Various interesting properties among the values of x,y and z are presented.

⚫ **Dr. M.A. Gopalan, Dr. S. Vidhyalakshmi and Ms. K.Lakshmi-** "Lattice Points on the Non-Homogeneous Cubic Equation $x^3 + y^3 + z^3 + (x + y + z) = 0$", Impact Journal of Science and Technology ISSN: 0973-8290, Vol7 No. 1, Page No. 21-25, 2013.

Abstract:

We obtain infinitely many non-zero integer triples (x,y,z) satisfying the non-homogeneous cubic equation with three unknowns $x^3 + y^3 + z^3 + (x + y + z) = 0$. Various interesting properties among the values of x,y and z are presented.

- **Dr. M.A. Gopalan, Dr. S. Vidhyalakshmi and Ms. K.Lakshmi-** "On the Non-homogeneous Sextic equation $x^4 + 2(x^2 + w)x^2y^2 + y^4 = z^4$, Global Research Publications IJAMA, Vol 4(2), Page No.171-173, December 2012.

Abstract:

We obtain infinitely many non-zero integer triples (x,y,z,w) satisfying the non-homogeneous cubic equation with three unknowns $x^3 + y^3 + z^3 + (x + y + z) = 0$. Various interesting properties among the values of x,y,z and w are presented.

- **Dr. M.A. Gopalan & G. Krishnamoorthy-** "On ternary Quadratic Diophantine Equation $x^2 + xy - ky^2 = z^2, k > 1$ ", Impact Journal of Science and Technology, ISSN: 0973-8290, Vol.6 (1), Page No. 99-104, 2012.

Abstract:

Non-zero two parametric integral solutions of the ternary quadratic Diophantine equation $x^2 + xy - ky^2 = z^2, k > 1$ are obtained. Also few interesting relations among the solutions are illustrated.

- **Manju Somnath, G. Sangeetha, and M.A. Gopalan-** Relation among Special Figurate Numbers through the Equation $y^2 = 10x^2 + 1$", Impact Journal of Science and Technology, ISSN: 0973-8290, Vol 5(1), Page No. 57-60, 2011.

Abstract:

We exhibit the relations among the special figurate numbers generated through the non-trivial solutions of the binary quadratic equation $y^2 = 10x^2 + 1$.

- **Dr .M. A. Gopalan & V. Pandichelvi-** "On the Cubic Equation with four unknowns $x^2 - xy + y^2 + k^2 + 2kw = (k^2 + 3)z^3$", Impact Journal of Science and Technology, ISSN: 0973-8290, Vol 6(1), Page No. 81-86, 2012.

Abstract:

The sequence of integral solutions to the cubic equation with four variables $x^2 - xy + y^2 + k^2 + 2kw = (k^2 + 3)z^3$ where ka is any non-zero constant is analyzed. A few properties among the solutions are also presented.

🔴 **Manju Somnath, G. Sangeetha, and M. A. Gopalan-** "On the Non-Homogeneous heptic equation with three Unknowns$x^3 + (2^p - 1)y^5 = z^7$", Diophantus Journal of Mathematics (Peer Reviewed) www.domainsmoon.com, ISSN: 2278-1714, Vol. 1(2), Page No. 117-121, 2012.

Abstract:

It is shown that there are identify many non-zero distinct integer triples (x,y,z) satisfying the ternary non-homogeneous heptic equation $x^3 + (2^p - 1)y^5 = z^7$ p>0. A few interesting relations between the solutions and special number patterns are obtained.

🔴 **Dr. M.A. Gopalan, V. Sangeetha, ManjuSomnath-** "Integral points on the quadratic Equation with four unknowns $2(x^2 + y^2) + 3xy + x - y + 1 = z^2 + 7w^2$", Diophantus J.Math (Peer Reviewed) www.domainsmoon.com, ISSN: 2278-1714, Vol. 2(1), Page No. 47-54, 2013.

Abstract:

The quadratic equation with four unknowns $2(x^2 + y^2) + 3xy + x - y + 1 = z^2 + 7w^2$", is analyzed for non-trivial integral solutions. A few interesting relations between the solutions and the special numbers are presented.

🔴 **Dr. M.A. Gopalan and K. Geetha-** "On the ternary cubic Diophantine equation$x^2 + y^2 - xy = z^3$", Bessels Journal of Mathematics, *www.domainsmoon.com*, Vol. 3(2), Page No. 119-123, 2012.

Abstract:

The ternary cubic Diophantine equation is analyzed for its infinitely many non-zero distinct integral solutions. A few interesting properties among the solutions are presented.

- **M.A. Gopalan & B. Sivakami-** "On the ternary Cubic Diophantine Equation $2XZ = y^2(X + Z)$", Bessel Journal of Mathematics (Peer Reviewed) ISSN: 2278-0858, Vol. 2(3), Page No. 171-177, 2012.

Abstract:

The ternary cubic Diophantine equation $2XZ = y^2(X + Z)$ is analyzed for its integral solutions. A few interesting relations among the solutions and some polygonal numbers are presented.

- **M.A. Gopalan and B. Sivakami-** "Pythogorean triangle with Hypotensue Minus 2(Area/Perimeter) as a square Integer", Archimedes Journal of Mathematics (Peer Reviewed) www.domainsmoon.com, ISSN: 2278-084X, Vol. 2(2), Page No. 153-166, 2012.

Abstract:

Different patterns of Pythagorean triangles each with hypotenuse minus two times area/ perimeter as a square integer are obtained. A few interesting observations in each pattern are illustrated.

- **Dr. M. A. Gopalan and B. Sivakami-** "Integral Solution of quadratic equation with four unknowns $x^3 + y^3 + z^3 = 3XYZ + 2(x + y)w^3$", Antarctica Journal of Mathematics , www.Domainsmoon.com, Vol. 10(2), Page No 151-159, 2013.

Abstract:

Three different patterns of non-zero integral solutions to the quadratic equation with four unknowns given by $x^3 + y^3 + z^3 = 3XYZ + 2(x + y)w^3$ are obtained. A few interesting relation between the solutions and special polygonal numbers are exhibited.

- **Dr. M. A. Gopalan and R. Vijalakshmi-** "Integral Solutions of Ternary Cubic Equation $X^3 + Y^3 + 16(X + Y) = 16Z^3$ Antarctica Journal of Mathematics, www.Domainsmoon.com, Vol. 9(7), Page No. 607-612, 2012.

Abstract:

The ternary cubic Diophantine Equation given by $X^3 + Y^3 + 16(X + Y) = 16Z^3$ is analyzed for its non-trivial distinct integral solutions. The recurrence relations satisfied by the solutions are given. A few interesting relations among the solutions are presented.

🔴 **Dr .M. A. Gopalan & G. Srividhya Krishnamoorthy-** "On the Diophantine Equation $X^3 + Y^3 = U^3 + V^3$", Impact Journal of Science and Technology, ISSN: 0973-8290, Vol 6(1), Page No. 137-145, 2012.

Abstract:

We obtain two different patterns of two parametric solutions for the cubic equations with four unknowns given by $X^3 + Y^3 = U^3 + V^3$. A few interesting results among the solutions for each of the patterns are given.

🔴 **Dr .M. A. Gopalan & B. Sivakami -** "An Interesting Rectangle Pythagorean Triangles Problem", Impact Journal of Science and Technology, ISSN: 0973-8290, Vol. 6(1), Page No. 67-76, 2012.

Abstract:

We search for different pairs of rectangle and Pythagorean triangle where each pair satisfies the relation that the sum of the perimeters of a rectangle and a Pythagorean triangle is equal to twice the area of the rectangle added with two. A few interesting properties satisfied by the sides of the rectangle and Pythagorean triangle are exhibited.

🔴 **Dr .M. A. Gopalan & B. Sivakami -** "Integral solutions of the Ternary cubic equation $4x^2 - 4xy + 6y^2 = [(k + 1)^2 + 5]w^3$", Impact Journal of Science and Technology, ISSN: 0973-8290, Vol. 6(1), Page No. 15-22, 2012.

Abstract:

The ternary cubic equation $4x^2 - 4xy + 6y^2 = [(k + 1)^2 + 5]w^3$ is analyzed for its non-zero integral solutions. Three different patterns of solutions are illustrated. In each pattern, interesting relations among the solutions and some special polygonal and pyramidal numbers are exhibited for the case k=1.

- **Dr .M. A. Gopalan & G. Srividhya Krishnamoorthy-** "On the Diophantine Equation $X^2 + Y^2 = U^2 + V^2$", Impact Journal of Science and Technology, ISSN: 0973-8290, Vol. 6(1), Page No. 111-116, 2012.

Abstract:

We obtain two different patterns of two parametric solutions for the cubic equations with four unknowns given by $X^2 + Y^2 = U^2 + V^2$. A few interesting results among the solutions for each of the patterns is given.

- **Dr. M. A. Gopalan, Dr. S. Vidhyalakshmi, Ms. S. Mallika-** "On the ternary quadratic equation $x^2 = (\alpha^2 - 1)(y^2 - z^2), \alpha > 1$", Bessel J.Maths (Peer Reviewed), www.Domainsmoon.com, ISSN: 2278-0858, Vol. II (3), Page No. 221-226, 2012.

Abstract:

The ternary quadratic equation represented by $x^2 = (\alpha^2 - 1)(y^2 - z^2), \alpha > 1$ is studied for its non-zero, distinct integral solutions. Three different patterns of non-trivial, distinct integral solution of the above equation are illustrated. A few interesting relations between the solutions and special polygonal numbers are presented.

- **M. A. Gopalan, S. Devibala, R. vijayalakshmi-** "Parametric integral solutions of the quadratic equation with four unknowns $w^2 = xy + 2z^2$", Diophantus Journal of Mathematics (Peer Reviewed) www.domainsmoon.com, ISSN: 2278-1714, Vol. 1(2), Page No. 93-98, 2012.

Abstract:

The quadratic equation with four unknowns represented $w^2 = xy + 2z^2$ is analyzed for different patterns of non-zero distinct integral solutions. A few interesting relations between the solutions and special figurate numbers are presented. Given a solutions, a general formula for generating a sequence of integer solutions is also exhibited.

Department of Microbiology

Abstract:

Poly (3-hydroxy butyrate)(P-3HB) and its copolymers are accumulated as an intracellular storage compound within the cells of a wide variety of bacteria. P(3HB) and its copolymers are a biodegradable material that serves as a exogenous carbon source for many microorganism in the environment. The microorganisms secrete extracellular PHB de-polymerases to degrade environmental P (3HB) and utilize the decomposed compounds as nutrients. A study was conducted to isolate Amycolatopsis strain from the rhizosphere soil and degradation of emulsified PHB by the strain. The polymerases was characterized. The single PHB de polymerases degrade high molecular weight PHB to butyric acid. The concentration of >90% was significantly decreased within 8 days by bacteria. The molecular mass of PHB de polymerases was 24 kDa was determined by SDS-PAGE. The optimum conditions for the enzyme activity were pH 5.0 and 450C. TH eenzyme was stable at a temperature lower than 500C and stable at pH higher than 2.0 but it was unstable at pH 1.0.

Department of Physics

🔴 **Ms. S. Santhakumari, Ms. R. Padmavathy, and Ms. E. Jasmine Vasantharani-** "Analysis of Transport Properties and Acoustical Parameters of Sulphanilamide in Non-Aqueous Medium", International Organization of Scientific Research Journal, (Peer Reviewed) http://www.iosr.org/, Impact Factor: 1.354, ISSN 2278-4861, Vol. 4(5), Page No.1-4, May 2013.

Abstract:

Sulphanilamide is the parent compound of all the sulpha-durgs which is important in urinary tract infections and meningococcal meningitis profilaxes. Ultrasonic velocity measurements are highly sensitive to molecular interactions and used to provide qualitative information's about the physical nature and strength of the molecular / inter-ionic interactions. In the present work, non-aqueous solutions of sulphanilamoide have been prepared with different concentrations and the experiments were carried out from a low temperature of 5° CC to a high temperature of 55° C. The ultrasonic velocity data combined with density and viscosity provides the standard means for determining the internal pressure, free volume and acoustical parameters. The various interaction occurring in the solutions are interpreted in terms of non-ion and ion-solvent interactions. An attempt is made identify the entry of solvate into the samples and the entry of drug molecules into the solvate which supports to identify the molecular structure.

AREAS FOR RESEARCH

COMPUTER SCIENCE

- *Artificial Neural Networks*
- *Data mining*
- *Bio Informatics*
- *Image Processing and Pattern Recognition*
- *Computer Applications using Discrete Mathematical Tools*

MICROBIOLOGY

- *Agricultural Microbiology*
- *Mycology*
- *Environmental Microbiology*

TAMIL

- *Mozhiyiyal*
- *Ariviyal Tamil*
- *Sangam Literature*
- *Bhakthi Literature*

MANAGEMENT

- *Pay on perquisites*
- *Employability skills in Arts & Science*
- *Women Role in IT sector*

COMMERCE

- *Marketing*
- *Inventory Management*
- *Finance Management*
- *Effective Management & Administration*

BIOCHEMISTRY

- *Biomolecules, Biotechnology*
- *Immunology Endocrinology Enzymes / Cancer Biology*
- *Techniques , Molecular Biology*
- *Clinical Biochemistry , Food & Nutrition*

MATHEMATICS

- *Number Theory*
- *Fluid Dynamics*
- *Applied Mathematics*

SOCIAL WORK

- *Community Development*
- *Medical and Psychiatry*
- *Human Resource Management*