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The edited book is a collection of peer-reviewed scientific papers submitted by active researchers in the International Conference on Science, Engineering & Technological Innovation. This book can be helpful to understand the various concepts of Science and Technological Innovation to the researchers and academia.

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International Conference on Science, Engineering & Technological Innovations - 2022

International Conference on Science, Engineering & Technological Innovations

Date: 13 – 14 August, 2022

Conference Proceedings

Edited by

Dr. Jessica C.
Dr.(hc) Rania Lampou
Dr. C. M. Patel
Prof. M. Narayani

Jointly organized by :

Scientific Research Association
Chreso University (CU), Zambia, Southern Africa
Research Culture Society
&
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International Conference on Science, Engineering & Technological Innovations

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Bangkok, Thailand

Conference Proceedings (Abstract Book)

Editors
Dr. Jessica C.
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Organized by :
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Chreso University (CU) Zambia
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&
Research Culture Society

Published by :
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About the organizing Institutions:

Institute of Science and Technology (EU) ; Institute of Science & Technology is a self financed institute, sponsored has been started in the year 2011 with a noble aim of imparting technical education. The institution enables them to be placed as the best professionals in industries and make them enter into high level programs with competence and confidence. Institute trains specialists in Physical Science, Life Science and Computer Science,

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Chreso University (CU), a faith based University founded by Dr. Helmut Reutter and Mrs. Esther Reutter, under the umbrella vision for Chreso Ministries, was officially established in the year 2010 under the Universities Act No. 26 of 1992. And in 2016, the University was duly registered with the Zambia Higher Education Authority under the Higher Education Act No. 4 of 2013. Chreso University operates three (03) University campuses namely: City campus (RC No. HEA 022); Makeni campus (RC No. HEA 084) and Ndola campus (RC No. 077) at Zambia, Southern Africa.

'Research Culture Society' is a Government Registered International Scientific Research organization. Society is working for research community at National and International level to impart quality and non-profitable services. Society has successfully organized 100+ conferences, seminars, symposiums and other educational programmes at national and international level in association with different educational institutions.

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- To organize lectures by scientists and experts and to disseminate their ideas and concepts among the science and technology community.
- Provide the delegates to share their new ideas and the application experiences face to face.
- The aim of the conference is to provide platform to students, scholars, academicians and industry persons to converse and share the ideas.

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International Conference on Science, Engineering & Technological Innovations (ICSETI-2022) conducted on 13 – 14 August, 2022 at Divalux Resort and Spa in Bangkok, Thailand. It aims at bringing together students, scholars, researchers, academicians and industry persons to deliberate on contemporary issues concern to Science, Engineering and Technology research and applications.

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Science, Engineering and Technology cross nearly every facet of modern life and, as problem solvers, engineers are perfectly capable of managing technical activities, mastering innovative ways of science and engineering field, when they spend time and efforts understanding and acting in the field. Scientific and technological innovation, as strategic support to improve social productivity and overall national strength, must be placed at the center for development of any country.

The framework includes engineering and technology as they relate to applications of science. Engineering is used to mean engagement in a systematic design practice to achieve solutions to particular human problems. Technology is used to include all types of human-made systems and processes.

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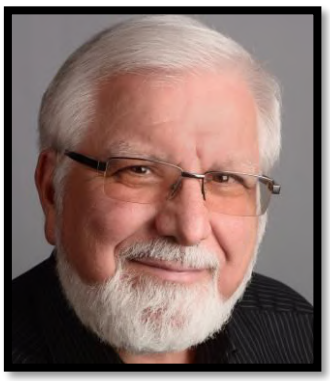

Dear Colleagues, Ladies and Gentlemen!!!

I am glad to be one of the members of the Organization Committee of two days Conference entitled, "International Conference on Science, Engineering & Technological Innovations" jointly organized by 'Scientific Research Association', 'Research Culture Society' and 'Chreso University, Zambia' dated on 13-14 August, 2022 in Bangkok, Thailand.

The world we live in today requires constant adjustments to the many challenges that our communities as well as our planet faces in this critical times. It is only through diligent and continuous research that we will be able to find better ways to deal with all the questions that confront us in this urgent manner.

Academic communities have no choice but put their heads together in collaboration making all the required efforts in order to find intelligent alternatives to the way we are doing business today. I'm therefore greatly encouraged to see such a great community of researchers come together for this Conference.

This conference will facilitate the formulation of the novel research ideas for innovations in the field of science and technology. Currently the same collaborative conferences are really helpful to display African talents in research and innovation efforts and outputs. Special thanks to Research Cultural Society for arranging this type of jointly Scientific Research Conferences.

Best wishes for the ample success of this conference.

Thank you!!!

Rev. Dr. Helmut Reutter
Chancellor, Chreso University, Zambia, Southern Africa.

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Dear Colleagues!!!

I am delighted and excited to be part of the Organization Committee of two days Conference entitled, "International Conference on Science, Engineering & Technological Innovations" jointly organized by 'Scientific Research Association', 'Research Culture Society', 'Eurasian University' and 'Chreso University, Zambia' dated on 13 & 14 August, 2022 in Bangkok, Thailand.

This international forum will allow the participants and academicians to reveal their endeavors, extend professional networks and jointly ascertain the existing and upcoming research instructions/guidelines and innovations at international level. I believe that all the presentations in this research conference will bring interesting topics with fruitful discussions. It is really helpful to Chreso University to showcase our students/scholars research outputs and grow in research and innovation through this platform.

I honestly hope that this conference will consider and discuss all the facts, issues, challenges, advanced development and updation in the specified topic globally and come up with solutions and recommendations that will contribute significantly to a healthier world.

My hearty wishes and regards for the great success of this conference.

Thank you!!!

Professor. Christopher Simoonga
Vice Chancellor, Chreso University, Zambia, Southern Africa.

Dr.C. M. Patel
Director, RESEARCH CULTURE SOCIETY
Web: www.researchculturesociety.org
Email : director@researchculturesociety.org

Message

Dear Professional Colleagues,

It is gratifying to note that 'Scientific Research Association'; Chreso University (CU) Zambia; Institute of Science and Technology, Eurasian University in collaboration with 'Research Culture Society' (Government Registered Scientific Research organization) are organizing - 'International Conference on Science, Engineering & Technological Innovations' at Bangkok during 13 – 14 August, 2022.

The aim of the conference is to provide an interaction stage to researchers, practitioners from academia and industries. The main objective is to promote scientific and educational activities towards the advancement of common citizen's life by improving the theory and practice of various disciplines of science and engineering. Provide the delegates to share their new research ideas and the application experiences face to face.

I believe, this International Conference will help in redefining the strong connection between students and academicians from different institutions. An additional goal of this international conference is to combine interests and scientific research related to General Science, Physical Science, Applied Sciences, Engineering and Technology Development to interact with members within and outside their own disciplines and to bring people closer for the benefit of the scientific community worldwide.

My best wishes to the committee members, speakers and participants of this scientific conference ICSETI-2022.

Dr.C. M. Patel

Director, Research Culture Society.

Dr.Jessica C.
Founder President, Scientific Research Association.
Email : scientificresearchassociation@gmail.com

Message

Dear Colleagues !

I am grateful to co-organizing institutions, all the speakers, committee members and presenters of 'International Conference on Science, Engineering & Technological Innovations' (ICSETI-2022) The overwhelming response to the contributors were acknowledged in very positive manner and its shows that new age is very much eager to work with technical literature. The rising researcher and scholar from various institutions and in-house participants motivate us to improve ourselves.

We are currently in the era of science and engineering revolution, spearheaded by recent developments in engineering, technology and sciences, providing sustainable solutions to various issues.

Here I am delighted that the series of conference on contemporary issues in computer technology has successfully completed its three folds and entered into fourth one, it's all due to the valuable efforts of faculty members of computer science and engineering department.

I extend my best wishes for the editorial team of the special issue, at last I hope this technological literature interaction will be a source of inspiration to upcoming educationists, technocrats and stakeholders.

Jessica

ICSETI - 2022 Conference Chair
Founder, Scientific Research Association

Prof. Maria Eropenko
Head, Institute of Science and Technology
EURASIAN UNIVERSITY
Email : ist@eurasianuniversity.uk

MESSAGE

Dear Colleagues!!!

I am proud to be the part of Organizational Committee of "International Conference on Science, Engineering & Technological Innovations - 2022", jointly organized by 'Scientific Research Association'; Chreso University (CU) Zambia; and Institute of Science and Technology, Eurasian University in collaboration with 'Research Culture Society' (13-14 Aug, 2022).

We have an exciting program at this conference that will allow participants to reflect upon and celebrate their accomplishments, renew friendships and extend networks, and jointly explore current and future research directions. I hope that all participants will have a productive and fun-filled time at this online conference.

I sincerely hope that this conference will deliberate and discuss all the different facets of this exciting topic and come up with recommendations that will lead to a better world.

I wish the conference great success.

Maria Eropenko
Head, Institute of Science and Technology,
Eurasian University

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Dr. Chirag Patel, Director – Research Culture Society.
Dr. Jessica C., Founder President, Scientific Research Association.

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Professor. Christopher Simoonga, Vice Chancellor, Chreso University, Zambia, Southern Africa.
Prof. Gagik Shmavonyan, Professor & Research Scientist, National Polytechnic University of Armenia, Department of Microelectronics and Biomedical Devices, Yerevan, ARMENIA Research Scientist, Institute for physical research (IPR), Solid state physics Laboratory, ARMENIA.
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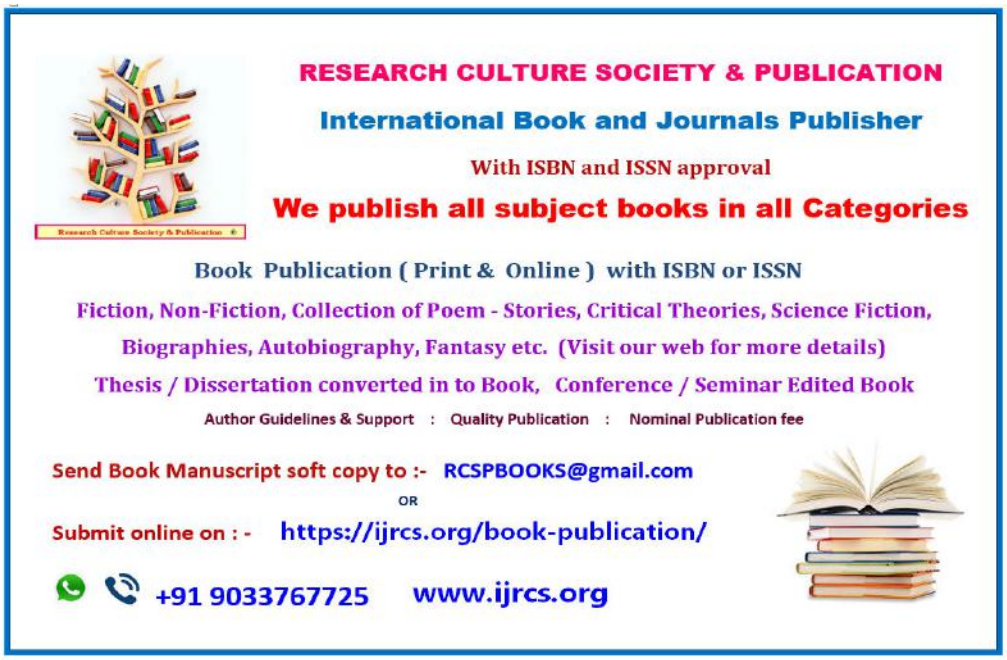

TABLE OF CONTENTS

Challenges and sustainability in Food Engineering

Dr Parin Somani
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Abstract: *Food is vital for good societal health and sustenance. Over the years a vast amount of research has been undertaken pertaining to the design, operation and construction of food processing technologies. This has highlighted numerous sustainability challenges within the food system affecting the environment in addition to social and economic factors. This study aims to identify contemporary challenges pertaining to food engineering. There is an objective to recommend sustainable solutions to facilitate current and future generations through past learnings. A systematic literature review was carried out. Results have identified reliance on the following; raw materials, water and energy. Challenges pertaining to the following have been discussed: food safety and security, food wastage and food packing. Innovation gaps in technology validation are identified and the need to implement practical solutions creating a sustainable impact on future generations. The need for generating awareness and acceptance of viable solutions is important. Simultaneously, there is a requirement to create an interest amongst scalable markets to ensure future sustainability in food engineering to help global societies.*

Key Words: *Food engineering, Food Safety, Food Wastage, Sustainability.*

Establishing Mental Health Service Utilisation for Depression and Substance Use Disorders by Young People in Institutions of Higher Learning in Zambia

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Abstract: *College and University students (young people) represent an important population in which the need to study their access to and use of mental health services (MHS) remains imperative. The young people's predisposition to depression and substance use disorders (SUDs) during this critical stage of development are high; especially that it affects emotions, psychological and physical entities. Academic pressure and socioeconomic factors also impact on their academic performance. Utilisation of services for depression and SUDs in Institution of Higher learning (IHL) are guided by accessibility of appropriate services and young people's mental health knowledge and perception of their need for services. This study establishes MHS utilisation for depression and SUDs by young people in IHL in Zambia, in order to enhance their well-being and quality of life. A sequential explanatory mixed methods design was used in this four phased study that involved review of hospital records, self-administered questionnaire, focus group discussions (FGDs) and key informant interviews. Descriptive and inferential analysis for quantitative data and thematic analysis for qualitative data were conducted. Hospital records results reveals that out of the 2731, 90.5% attendances were for SUDs, 9.5% depression and only 0.5% co-occurring disorders. An overall 4.8% utilisation rate was found among young people in the general population. The survey showed low levels of utilisation of in-campus psychological counselling (40%) and health services (24.7%). Further, two significant associations were found at $p<0.05$, use of psychological counselling services with knowledge of mental health problems ($p=0.013$) and; perceived need of care ($p=0.019$). Qualitative results of FGDs indicated self-stigma, cultural beliefs and lack of confidentiality in the services offered limited utilisation. In addition, one to one key informant interviews reveals the need for strengthening the support offered to young people with involvement of their guardians. Therefore, young people desire more awareness of mental health issues, non-stigmatising and non-prejudiced youth friendly in-campus services. The study recommends awareness creation that promotes early identification of depression and SUDs and; improvement in access to health services.*

Key words: *MHS, utilisation, depression, SUD, young people, IHL*

Analysis of some antidiabetic agents in bulk and pharmaceutical formulations

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Abstract: *A simple and more economical RP-HPLC method was developed and validated for the simultaneous determination of Metformin, Saxagliptin, and Dapagliflozin in the bulk and pharmaceutical dosage form. The chromatographic conditions were standardized using a C18 column with 250mm in length and an internal diameter of 4.6mm with a size 5µm. The analyte detection was carried out by using a UV detector set at a wavelength of 212 nm. The mobile phase consisted of 10 mM Ammonium acetate Buffer (pH 6.2), Methanol, and Acetonitrile (45:20: 35 %v/v/v), and the retention time of Metformin, Saxagliptin, and Dapagliflozin was found to be 3.4, 6.4 and 13.09 min respectively. The calibration curves of the three drugs were linear with correlation coefficients of 0.996, 0.996, and 0.999 over a concentration range of 50000-150000 ng/ml for Metformin and 250-750 ng/ml for Saxagliptin and Dapagliflozin. This method has been validated and shown to be accurate, precise, specific, sensitive, linear, robust, and fast. The current method has been statistically validated according to the ICH guidelines and this method has been subsequently developed and applied successfully to determine the levels of Metformin, Saxagliptin, and Dapagliflozin in a combined formulation and in the routine quality control analysis with good accuracy and sensitivity.*

Key Words: *RP-HPLC, Metformin Hydrochloride, Dapagliflozin, Saxagliptin, Method validation*

Synthesis and Characterization of Biodegradable Ceramics for Bone Tissue Engineering Application

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Abstract: *The porous biodegradable magnesium silicate bioceramics was synthesized by sol-gel method and evaluated the in vitro degradability of the bioceramics. The main aim is to understand the importance and role of magnesium silicate bioceramics in terms of degradation and biocompatibility for bone regeneration and therapeutic activity. Moreover, magnesium plays an important in bone remodeling, DNA stabilization, proliferation and stimulation of osteoblastic cell growth. For successful bone regeneration, a degradable bioceramic should have the degradation rate matching to that of host bone regeneration rate. The in vitro degradation behavior was measured as a function of immersion time in simulated body fluid (SBF) for up to 8 weeks and studied the surface morphology and elemental composition of the magnesium silicate bioceramics. The calcium phosphate bioceramics are widely used for reconstructive bone defects because of the chemical resemblance to the natural bone. Apart from calcium phosphate, magnesium based resorbable bioceramics have gained significant interest for temporary bone replacement, treating osteoporotic bone and small scale bone defects. Being the fourth most abundant cation magnesium bioceramics are readily accepted in bony tissue. In this work, we aimed to develop porous biodegradable ceramics for bone tissue engineering applications.*

Key Words: *Bioceramics, forsterite, biomaterials, magnesium silicate, biocompatibility.*

Investigation of Siderophore in Mycorrhizal and Non-Mycorrhizal roots on two experimental plants

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Abstract: Mycorrhizae establish symbiotic relationships with plants and play an essential role in plant growth, disease protection and overall soil quality. Siderophores are potent ferric ion chelators produced by microbes like bacteria and fungi during iron stress. The study was to investigate the siderophore content in soil and root in inoculated with *Rhizophagus fasciculatus* compared with noninoculated control plant PMK-1 and Vaibhav variety of *Solanum lycopersicum* L,. Randomized block design of 3 replicates for each treatment and of both the varieties were inoculated with a thin layer on inoculums *Rhizophagus fasciculatus* around 2cm below the soil surface except in non-inoculated control pots before sowing. After 45 days the uprooted plants were subjected to qualitative and quantatative analysis. The qualitative test of Chrome Azurol sulphonate (CAS) Assay showed positive reaction, produced orange/golden yellow color indicated the presence of hydroxamate siderophore. The estimation of siderophore content in root of inoculated *Solanum lycopersicum* L., of PMK-1 variety showed 1.59 µmol/ml and vaibha variety 0.93 µmol/ml similarly in soil of both the variety recorded 0.67 µmol/ml and 0.84 µmol/ml respectively. The content of siderophore was recorded high in the *Rhizophagus fasciculatus* inoculated roots compared to in noninoculated control, the roots produced higher siderophore than soil. This investigation has clearly demonstrated and recorded that the arbuscular mycorrhizal symbiosis is shown to accompanying the greater Fe uptake rates by a different host plants solubilization of Fe from insoluble iron sources must be regarded a pre requisite for improvement of plant Fe nutrition.

Key Words: Siderophores, *Rhizophagus fasciculatus,* Vaibhav, Bacteria, Environment.

Detecting Outliers Using Proposed Z-Score Methodology to Predict the students for Job Opportunities

[1]Sudha Abirami Rajendran **[2]Irfan Ahamed Mohammed Saleem***
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Abstract: The aim of higher education institutions is to enhance quality education to its students for their better job opportunities. Data mining Techniques are used to predict the student selection in placement. It is used to identify the slow learners who need extra attention. Outlier detection is the process of identifying and subsequently excluding outliers from a given dataset. Z-scores is a unique method for finding distant data based on data positions. The z-score method is fast and accurate to detection of an outliers. This paper describes a statistical approach called improved Z-score method for outlier detection in placement data. This paper takes student academic information (CGPA) as an input and predicts the standing of placement. A benefit of the modified Z-score method is that it uses the median and MAD rather than the mean and standard deviation.

Key words: Improved z-score method, Outlier detection, Clustering algorithms, Prediction of students' Placement, Mean Absolute Deviation.

Shorea Robusta(Shaku) leaves extract as a eco-friendly corrosion inhibitor for Mild steel in 1M Sulphuric acid solution

Pinky Sisodia [1], Renu Singh[2]

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Abstract: *The corrosion inhibition on mild steel in 1M sulphuric acid solution was evaluated by shakhu leaves extract. Study performed by FTIR and UV have various concentration of SR extracts ranging from 0.05,0.1,0.2,0.3,0.4 and 0.5(v/v)were used and corrosion rate (CR)on mild steel and inhibition efficiency (IE) were investigated at 2 temperatures 298K and 308 and found that Corrosion rate increases with increase in temperature as inhibition corrosion increases corrosion rate decreases and IE decreases at elevated temperature. The substantial reduction in CR with increase in the concentration of SR extract was noted at different temperatures. However the increase in the CR at each SR extract along with the increase in the temperature failed to the increase in kinetics activities at the electrolyte and metal interface .Results shows with the increase of 0.5 g/l CP extract about 4 times lower CR of mild steel at studied temperature than in pure 1M HCL solution affirm it's robust inhibitive efficiency. Surface Examination suggest that a layer of inhibitor material absorbed on the surface of mild steel at low temperature is responsible for high IE and this phenomenon is characterized as chemisorption. Weight loss data used to test three well known absorption isotherm Langmuir, Freundlich models and found freundlich isotherm is found to be best fitted well to all the models to certain extent. However freundlich isotherm is found to be fitted with as correlation reaching to unity.*

Key Words*: Corrosion inhibition, shorea robsta, effect of temperatures , adsorption isotherms, chemisorption*

Anti – Chair Rocking Device

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Abstract: *According to 'The Guardian', approximately 7000 students are admitted to hospitals with chair related injuries, 70 percent of which are due to students rocking their chairs. Clearly, students rocking their chairs backwards to dangerous levels is a safety hazard. It has the potential to cause serious physical injuries and may result in legal battles between parents of students who suffer injuries and school authorities. Our own school has had incidents involving students falling off chairs and there are some students who we personally know that have suffered physical harm due to this. Keeping all of this in mind, our team decided to make an attachable device to a chair that will prevent a chair from rocking. After experimenting with multiple designs, using applied physics, our team developed a device which prevents our school chair from being rocked. Our product is a bent rod that can be attached to both the back legs of the chair making it extremely hard to rock the chair. It is made of aluminium with a piece of acrylic rubber attached to the base of the device. This device will make chairs much safer for children in school. It is a far cheaper and practical alternative to purchasing completely new chairs that are designed to prevent rocking and this device can be attached to existing regular chairs. We estimate our device to cost 15 UAE Dirhams, which is a small amount compared to the price of a table and chair set. Furthermore, it is more practical than other attempts at solving this problem which involve purchasing entirely new chairs. We wrote an academic paper for this device.*

Key Words: *Rocking, Chair, Health, Safety, Injuries, Physics, School, Student, Children*

Automatic Water filling and Controller

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Abstract: *While refilling the water tanks, to save our Time and manpower. This process is done by automatically. This system used by all residency areas and other industrial purposes in cheap efficiently.*

Key Words: *Automatically, Manpower, Time, Cheap, Efficient*

Relevance of Senior Secondary School Religious Education to the Medical Profession in Zambia

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Abstract: *This article examines key moral values and attitudes promoted by senior secondary school Religious Education and establishes how relevant or suitable they are to the required moral values and attitudes in the medical professions in Zambia. The objectives of the study were; to identify key moral values and attitudes promoted by senior secondary school Religious Education syllabuses in Zambia. The other objective was to explain the relevance or suitability of key moral values and attitudes promoted in senior secondary school Religious Education to the required moral values and attitudes in the medical professions in Zambia. The study discussed in the article was qualitative in nature with a descriptive design which identified the moral values and attitudes of* ***integrity, responsibility, empathy religious faith and respect for others*** *in RE syllabuses. These identified moral values and attitudes were further compared with the required moral values and attitudes in the actual work of medical doctors. Data was collected through document analysis, interviews and observations. The total number of respondents in the study was thirty-six. Document analysis was used to analyse Religious Education Syllabuses and further used to analyse medical doctors' ethical codes of conduct documents. For the purpose of triangulation, the moral values and attitudes of medical doctors were further observed in patients' wards at UTH. The study discussed in the article revealed that senior secondary school Religious Education syllabuses contained key moral values and attitudes including* ***integrity, responsibility, empathy, religious faith and respect for others****, which were relevant to the medical profession. This led to the final conclusion that Religious Education as a school subject is relevant to the medical professions in Zambia.*

Finally, the study discussed in the article recommends that at senior secondary school level, pupils should be encouraged to learn Religious Education because it is an important school subject which can equip them with integrity, responsibility, empathy, religious faith and respect for other people's religious beliefs. In raising the status of Religious Education, the study recommends the need to make people aware that the moral values and attitudes learned in Religious Education are relevant to important fields such medicine. Finally, the study discussed in the article challenges other scholars to research further in order to establish how suitable or relevant the moral values and attitudes promoted by Religious Education are to other professions not covered in this study.

Key Words: *Integrity, Responsibility, Empathy, Religious Faith, Respect for Others, Relevance, Religious Education, Medical Profession.*

Employment Status and Challenges Encountered by Education Graduates in the Pandemic Era

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Abstract: *The study was conducted to trace the 2020 education graduates of the Abra State Institute of Sciences and Technology in the Philippines. It mainly looked into the employment status of the graduates right after graduation and determined the challenges they encounter during the pandemic. Mixed methods of research were utilized which are quantitative and qualitative. An online survey was conducted to trace the students. The total graduates in the said school year are ninety (90) but due to some circumstances, there were sixteen (16) who were not tracked by the researcher. The graduates are mostly employed in the business and industry sectors while only a few are hired in the teaching field. The pandemic has brought varied challenges in their lives namely: struggle to find a job, postponement of the board exams, financial difficulty, stress and anxiety, strict health protocols, and work adjustment. To make sure that its curriculum is competitive, it is advised that Abra State Institute of Sciences and Technology benchmark with other universities. To assess the specific work skills and values to be incorporated into the training, a review may be carried out on a regular basis. The college may also build connections with regional, national, and worldwide educational institutions for graduate hiring opportunities and teaching internships. The last five years' worth of education graduates could be used to undertake a more thorough tracer study that includes employability, promotions, work ethics, and practical skills.*

Key Words: *Employment status, challenges, education graduates, pandemic era*

Scrub Typhus Disease Outbreak at Cheural Village, Lawngtlai District, Mizoram, North-East India

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Abstract: A rickettsial disease which is commonly known as scrub typhus is an acute, febrile illness inmen caused by the pathogen, a gram-negative bacterium *Orientia tsutsugamushi* (Family: *Rickettsiaceae*)from the bite of infected mites (chigger). Rickettsial infection can be diagnosedwith the Weil Felix (WF) agglutination test. Multiple cases, having symptoms like scrub typhus illness were also reported by health officials among the residents of Cheural village which is under Sangau PHC, Lawngtlai District, Mizoram. Free clinic was organized for the villagers at Community hall, Cheural village which was followed by public awareness campaign at Cheural community hall on the prevention, vectors, Symptoms, treatment and control of the disease. For the investigation, the whole village was sub-divided into four areas and grouped as area north (N), east (E), west (W) and south (S). Among the 242 person tested, 80 (33.05%) person were found reactive with Weil felix OXK at 1:160 titre value. The reactivity rate was relatively high and was 7.44% from the total population of Cheural village which was 1060 as per 2011 census. Among the positive patients, there were 45 females and 35 males and the mean age was 40 years while mean cases were 8.88. The 5 captured rodents' sera were tested with Weil felix OXK, OX19 and OX2. All of the 5 captured rodent sera were reactive with one or more antigen. The chigger index by far exceeds the critical chigger index (0.69) for scrub typhus disease outbreaks From this investigation, it was observed that scrub typhus and/or other rickettsial diseases were responsible for the outbreak. Since the reactivity rate of Weil felix with sera of captured rodent and chigger index were extremely high, it may also be concluded that local transmission of the disease within the village was very likely.

Key Words: *Outbreak, Rickettsial disease, Rodent, Scrub typhus, Weil felix test.*

Persea Americana reduced and capped silver nanoparticles to simultaneously detect aqueous Aluminum(III) and Chromium(III) ions

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Abstract: *Detecting water toxins, especially heavy metal ions, is a priority. Detecting toxic heavy metal ions has been quantified, but adaptable devices could expand sensing applications. We used dried avocado peel extracts (DPeA) to synthesize and stabilize AgNPs. pH, temperature, and reducing agent volume was used to optimize AgNPs size. The sensitivity and selectivity of the AgNPs toward different metal ions viz. Ni(II), Cd(II), Al(III), Hg(II), Cr(III), Ba(II), Pb(II), Zn(II), Co(II), Mn(II), Cu(II), Ca(II), Mg(II), and K(I) were examined. The detection probe was selective and sensitive to Al(III) and Cr(III) ions with detection limits of 0.04 and 0.05 ppm, respectively. High-resolution transmission electron microscope (HRTEM), ultraviolet-visible (UV-Vis) spectroscopy, and dynamic light scattering (DLS) research findings support an agglomeration-based mechanism for detecting both metal ions. This technology was also leveraged for the colorimetric identification of harmful heavy metals in actual water samples.*

Key Words: *Green synthesis; Persea Americana; silver nanoparticles (AgNPs); colorimetric sensor; heavy metal ions.*

$K_2S_2O_8$-activated DMSO as a methylene source (-CH_2-) for regioselective para coupling of two anilines moiety

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Abstract: *Transitional metal-free approaches for the formation of C-C bonds have attracted scientists due to their environmentally friendly benign and inexpensive synthesis. In this present report, an inexpensive and commercially available oxidant, $K_2S_2O_8$ has been utilized for the activation of DMSO. The activated DMSO provided the methylene source (-CH2-) from its structural units which act as a bridging source for regioselective para coupling of two anilines moiety. This developed methodology was successfully applied to a variety of anilines such as N-substituted anilines, anilines containing carboxylic acid and the ester group. This method worked well with both electron-withdrawing and electron-donating groups in moderate to good yields. Based on control experiments and previous reports a plausible mechanism has been proposed. This developed protocol is simple, quick, and inexpensive with wide functional group tolerance.*

Key Words: *DMSO, Coupling, Aniline, C-C bond formation, bridging.*

Allelopathic Potential of *Tramindus indica* L.on morphological parameters of Black gram (*Vigna mungo* (L.) HEPPER)

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Abstract: *The Present investigation has been carried out to assess the Allelopathic Potential of Tramindus indica L. on morphological parameters of Black gram (Vigna mungo (L.) HEPPER). Various concentrations of leaf latches and leaf extracts were prepared respectively from fully senesced fallen leaves and fully matured leaves of Tamarindus tree for the experiment. In the germination study, healthy and uniform seeds of vigna mungo selected and experiments were conducted by the application various concentrations of leaf leachates and leaf extracts to the seeds length and germination study and were dramatically decreased with increasing the concentrations of leaf extract The leaf extract had more inhibitory effect than the leaf leachates on germination and morphological parameters of black gram. Form this investigation it clearly showed Tamarinbus indica had strong allelopathic effects on germination and growth of black gram vigna mungo.*

Key Words: *Allelopathic Potential, Germination study, leaf leachates, leaf extracts, morphological parameters, black gram, Tamarindus tree.*

Optimisation Process in Transmission Line Designing and Utilisation of Modern Techniques

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Abstract: *Optimum spotting is one of the most challenging problems in transmission line design. Spotting optimization falls in the general category of problems referred to as dynamic programming. Construction of transmission lines involves heavy investment and hence, a careful analysis needs to be carried out at the planning stage in order to take investment decisions. There is a need for assessing the cost of these lines based on scientific principles as compared to those adopted conventionally based on availability of standard designs and line designer's experience. Widely used transmission line design software like PLS-Cadd has Line Optimization tool, which is one of the most powerful features. It will provide the least-cost solution for spotting a given set of structures for a desired set of design criteria on any desired route. To reduce the risks of power system failures, it is important to strengthen the structure of a power system and its management optimization. The emergent convolution of power systems and uncertainties in power system operation increase the risks of power system failures. The core focus of this paper will remain on complex network theory-based indices, optimization models, optimization methodologies, challenges, and technical issues, and discusses future direction for transmission network reconfiguration problem for grid resilience. This study will analyse possibilities of the improving transmission network reconfiguration problem by highlighting their advantages and limitations.*

Key Words: *Transmission Line Design, Optimisation, PLS-Cadd, Reconfiguration, Low Costing.*

APPLICATIONS OF GENE EXPRESSION STUDIES IN LIVESTOCK AND POULTRY

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Abstract: *Gene expression refers to the conversion of genetic information from genes via messenger RNA (mRNA) to proteins. These are the instructions in our DNA, that are converted into a functional product, such as protein. The process by which a gene gets turned on in a cell to make RNA and proteins. Gene expression may be measured by looking at the RNA or the protein made from RNA or what the protein does in a cell. RNA study provides clues for functional differences between tissues and cell types, function and interaction between genes, gene regulation and regulatory sequences, identification of candidate genes for any given process or disease and expressed sequences and genes of a genome. The transcriptome comprises all RNA that coding for genes and non-coding RNA and study of transcriptome is known as transcriptomics. Gene expression is studied by many different methods out of which microarray, RT-qPCR and RNA-seq are main methods. Differentially expressed genes (DEGs) were identified from RNA-seq analysis. A gene is declared differentially expressed if a difference or change observed in read counts or expression level or index between two experimental is statistically significant. DEGs are important to understand the biological differences between two different expressions. These DEGshelps in isolating effective molecular markers that can be used for genetic selection in animal breeding. Many studies were carried out for exploring complexity of transcriptomes by performing RNA sequencing. Integrated analysis of DEGs and reported QTL and GWAS data allowed us tofind a series of key candidate genes influencing different traits of our interest.*

Key Words: *Gene expression, RNA, transcriptomes, DEGs, candidate gene, genetic selection.*

Selenium Biochemistry

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Abstract: *Selenium plays an important and unique role among the (semi)metal trace essential elements because it is the only one for which incorporation into proteins is genetically encoded, as the constitutive part of the 21st amino acid, selenocysteine. Selenoproteins include from the glutathione peroxidase (GPx) family, selenoprotein P, the 15 KDa selenoprotein and thioredoxin reductase in cancer prevention is doubtful. A number of mechanisms have been suggested to explain the anti-cancer effects of Se. Some cellular processes and molecular pathway may be involved in the anti-cancer effect of selenium.*

Key Words: *Selenium, Selenocysteine, selenoprotein.*

PLAGIARISM DILEMMAS DURING SCIENTIFIC WRITING AND HOW TO PREVENT IT

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Abstract: *Research work and its publication need continuous training, implementation of new discoveries and follow-up of academic honesty and journalistic ethics. Lately cases of excessive plagiarism have been identified in research publication. Plagiarism is a subject to sanctions such as penalties, suspension, expulsion from work, considerable fines and even imprisonment (Kock N. 1999 and Kock N. 2003). The topic of plagiarism is a large and varied subject with wide-ranging implications for education. This section contains research sizing the problem, trying to understand why it's a problem and coming up with ideas on how to best deal with it. The good practice to limit the plagiarism is to educate students on how to properly conduct research, cite, quote, and create own unique and original work. This section contains a number of policy and recommendations for scientific writing. The only way we can make sure we are successfully teaching students how to write with integrity is by checking and assessing their work. Institutions that are prepared to prevent or handle plagiarism benefit from higher levels of academic honesty. It is compulsory to all the authors, reviewers and editors of the entire research journal to know about the plagiarism and how to avoid it by the ethical guidelines and use of plagiarism detection software before submitting the research paper (Kumar et al, 2014). Therefore, it is imperative for authors to increase their knowledge about common type of plagiarism and how to avoid it? Author also suggests that plagiarism should be the part of syllabus in school and college education.*

Key Words: *Dilemma, plagiarism, scientific writting, research writting.*

Morphological study of the Gomati, Yamuna, and Varuna river basins in India using remote sensing data: A review

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Abstract: *The basin dynamics and drainage network system of tributaries of the Ganga river were comparatively studied via morphometric analysis. Morphometric parameters such as stream order, bifurcation ratio, drainage density, elongation ratio, circulatory ratio, form factor, length of overland flow are considered in the current research.Thorough inspection of the data specified that Gomti, Varuna and the Yamuna river basins are in the 7^{th}, 5^{th} and 4^{th} order respectively and they have consistent lithology and dendritic drainage pattern. River basins are tectonically undisturbed as they low bifurcation value. Low drainage density values suggest that the basins are densely vegetated and consists of permeable subsurface. Shape parameters viz. elongation ratio, circulatory ratio signified that basins are elongate in shape and it suggests that river basins are still in their infancy. Also length of overland flow indicates that basins are in early mature stage. According to form factor value it is confirmed that river basin consist of shorter flow peaks of long lasting duration. The current study is exceedingly beneficial in sustainable basin management, infrastructure projects, flood management and other societal development.*

Key Words: *Morphometry; infrastructure; geomorphology; elongation ratio.*

Synthesis, characterization and Anti-MRSA activity of benzimidazole derivatives

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Abstract: *This investigation describes a synthesis of thiabendazole derivatives and their systematic analysis against pathogenic bacterial species. The recently synthesized compounds are characterized by elemental analysis, ^1H magnetic resonance spectrometry, IR and mass spectral data. The derivative exhibited significantly potent antibacterial activity against MRSA with effective MIC. The synthesized derivatives are presented as potential antibacterial compound having potential applications in the functioning treatment against pathogenic bacteria infections.*

Key Word: *Synthesis, Substituted thiabendazole, MRSA, MIC.*

Security Assessment of Cloud Technology in Online Learning Environment

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Abstract: *The world saw a drastic situation in the year 2020 when the pandemic was declared. The global spread of COVID-19 severely affected many sectors but education has been hit hard by corona virus during the pandemic. It has changed education forever and virtual classroom has come to the rescue. The cloud technology was used for implementing effective classroom management and cloud-based teaching. In the paper, we will research about the current scenario of the virtual education environment and the challenges faced by the institutions using script. The study will highlight the vulnerability of online learning methods. We will provide the prevention techniques for improving security in case of DDOS, ARP Spoofing and other attacks. Further, we will create a dummy attack model and try to elaborate our findings and prevention techniques. For the reference, we will examine the current online learning platforms and how they guard their system against virtual classroom security threats.*

Key Words: *Cloud Computing, Security, Vulnerability, Virtual Environment.*

Study of Crystallite Size determined from X-ray Diffraction Pattern of $NbSe_2$ Nanoparticles

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Abstract: *$NbSe_2$ nanoparticles are synthesized by the wet chemical method at ambient temperature. The synthesized nanoparticles are characterized by X-ray diffraction (XRD) and energy dispersive X-ray (EDX) analysis. The XRD outcome revealed that the sample having crystalline hexagonal structure with lattice parameters a = b = 3.443 Å, c = 12.576 Å and α = β = 90^0, γ = 120^0. The EDX result confirmed that the sample is near stoichiometry and free from any contaminants. The average crystallite size of the nanoparticles is estimated via Scherrer's method (graphical and analytical), Williamson-Hall relations (uniform deformation model, uniform stress deformation model, and uniform deformation energy-density model), Halder-Wagner relation, and size-strain plot method. Physical parameters such as lattice stress, strain, and energy density are also evaluated more precisely by considering all the XRD pattern's reflection peaks. The outcomes showed excellent intercorrelation of the average crystallite sizes as estimated by employing various methods.*

Key Words: *Wet chemical method, $NbSe_2$, XRD, crystallite size.*

Study of Electrical Transport Properties of Chemical Vapour Transport Grown $CuInS_2$ Single Crystal

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Abstract: *$CuInS_2$ single crystals are prepared by the chemical vapour transport technique. The synthesized crystals are characterized by X-ray diffraction (XRD) and energy dispersive X-ray (EDX) analysis. The XRD outcome revealed that the sample having crystalline tetragonal structure with lattice parameters $a = b = 5.51$ Å, $c = 11.32$ Å and $\alpha = \beta = \gamma = 90^0$. The EDX result confirmed that the sample is near stoichiometry without the presence of any impurities. The dc electrical resistivity variation with temperature in the range of 303 K and 723 K showed decrement in the value of resistivity confirming the nature of the crystal being a semiconductor. Hall effect measurement is performed to evaluate parameters such as Hall coefficient, carrier concentration, and mobility. The negative sign in the Hall coefficient value (-1.98×10^4 $C{\cdot}cm^3$) confirmed the semiconductor to be n-type. Seebeck coefficient variation with temperature also confirmed that the nature of the sample being semiconductor has n-type conductivity. The electrical transport properties corroborate each other results.*

Key Words: *CVT, $CuInS_2$, Resistivity, Hall effect, Seebeck coefficient.*

White to brown adipocyte transition mediated by Apigenin via VEGF-PRDM16 signaling.

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Abstract: *The dysregulated energy metabolism in white adipose tissues results in derangement of biological signalling resulting in obesity. Lack of vascularisation in these white adipose tissues is one of the major reasons for dysregulated energy metabolism. Not much work has been done in this direction to understand the role of angiogenesis in white adipose tissue metabolism. In the present study, we evaluated the effect of angiogenic modulator in the metabolism of white adipocyte. Bioactive Apigenin was selected and its angiogenic ability was studied. Apigenin was shown to be highly pro-angiogenic hence the effect of Apigenin on denovo and trans-differentiation of WAT was studied. Apigenin showed enhanced de novo differentiation and trans-differentiation of mouse white adipocyte into brown like phenotype. In order to understand the effect of Apigenin on adipose tissue vasculature, co-culture studies were conducted. Cross talk between endothelial cell and adipocytes were observed in co-culture studies. Gene expression studies of co-cultured cells revealed that browning of white adipocyte occurred by triggering the expression of vascular endothelial growth factor A. The study provides a new insight for inducing metabolic shift in white adipocytes by modulation of angiogenesis in white adipocyte microenvironment by the upregulation of PRDM16 cascade to trigger browning for the treatment of obesity.*

Key Words: *Angiogenesis, VEGF, white adipocyte, browning, Uncoupler.*

Eberhart and Russell and AMMI Analysis for Genotype x Environment interaction of multiple traits of Pearl Millet Genotypes under Eight Different Environments

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Abstract: *Farmers with limited resources can plant pearl millet, a grain with high climatic tolerance. In order to meet the needs of farmers and researchers operating in this area, it would be necessary to identify the optimum genotypes for general and specialized adaptation as well as the ideal testing sites in peninsular India. The aim of the present study was to obtain stable genotypes and Genotype x environment interaction evaluation laid out in randomized block design in eight different environments viz., ARS Mandor, Bikaner, RARI Jaipur, Jamnagar, Hisar, Gwalior, Ranchi, Jammu Kashmir of India conducted with three replications of twenty-nine genotypes with nine traits of pearl millet for one year i.e. 2019. To analysed the pattern of stability under the targeted environments Eberhart and Russell model was used, and genotype x environment interaction evaluation AMMI techniques was applied. The data were collected from the Department of Genetics and Plant Breeding, CCS Haryana Agricultural University, Hisar-125004, Haryana, India. The stability analysis was sufficient, according to the combined analysis of variance, which showed significant ($p<0.01$) differences between environments, genotypes, and genotype x environment interactions. It was noted that not a single genotype was stable for all the characters.*

Key Words*: Genotype x environments interaction, AMMI, pearl millet genotypes, Eberhart and Russell.*

Protein-based metal bio-cleaner for detoxification of wastewater

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Abstract: BACKGROUND: *Copper is an essential redox-active transition metal accessible in the very least amount in healthy living cells. Exposure to heavy metals through contaminated soil, the food chain and drinking of contaminated groundwater affects cellular metabolism in the human body. Hence, developing innovative next-generation approaches with a dual function such as efficient detection (sensor) and removal of heavy metals (Cu2+) in the environment is of paramount importance. Our study deals with an engineered biologically compatible green fluorescent protein (GFP) with metal-binding amino acid (3-aminotyrosine) for effective sensing and removal.*

RESULTS: *The fluorescent-based sensing of congener protein (amGFP) with heavy metal Cu2+ was extensively explored through fluorescence, circular dichroism spectroscopic, and computational simulation approaches. The amGFP exhibits a low dissociation constant value of 5.25 ~mol L^{-1}. In addition, the engineered congener protein was used as a bio-cleaner to remove Cu2+ from environmental samples. The copper binding capacity of engineered protein (amGFP, 346.46 ~g mL^{-1}) showed a 1.6-fold increase compared with native protein (GFP, 214 ~g mL^{-1}). GFP and amGFP immobilized on ethylenediamine-functionalized granular activated carbon (FGAC) were applied to environmental samples; FGAC-immobilized amGFP exhibited Cu2+ removal of about 85%, which was twofold higher than that of FGAC-immobilized GFP.*

CONCLUSIONS: *The results prove that amGFP was able to bind more copper than native GFP. This is an early attempt to develop a genetically encoded fluorescent protein that could be used to effectively remove Cu2+ from wastewater.*

Key Words: *congener protein; non-canonical amino acid; bio-cleaning; copper; bioremediation.*

DEVELOPMENT AND NUTRITIONAL EVALUATION OF VALUE ADDED BISCUITS SUPPLEMENTED WITH POMEGRANATE PEEL POWDER

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Abstract: *This study describes information pertaining to development, nutritional evaluation and shelf life of value added biscuits prepared using wheat, chickpea and pearl millet flour and pomegranate peel powder. Chickpea and pearl millet flour ratio was kept constant (15%) while wheat flour was substituted by pomegranate peel powder at 6, 8, 10 and 12 per cent levels in biscuits. Value added biscuits containing 6, 8 and 10 per cent pomegranate peel powder were organoleptically acceptable and their scores fell in the category 'Liked very much' to 'Liked moderately'. The protein and fat contents in control biscuits were 9.27 and 19.26 per cent, respectively which were significantly (P≤0.05) lower than Type-I (11.21 and 21.32 per cent, respectively), Type-II (10.82 and 21.98 per cent, respectively) and Type-III (10.42 and 22.52 per cent, respectively) of value added biscuits. The value added product had significantly higher, crude fibre, mineral content and antioxidant activity than control. The sensory scores for biscuits decreased gradually during storage period however biscuits were found to be organoleptically acceptable up to 90 days, respectively. From the present study it is concluded that all the value added pomegranate peel powder supplemented biscuits were found to have better nutritive value than control.*

Key Words: *Pomegranate peel powder, Supplemented, Value added, Organoleptically, Acceptable.*

IN VITRO BIOLOGICAL ACTIVITIES OF PLANT-ASSOCIATED *Eurotium* FUNGAL STRAINS IN VIETNAM

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Abstract: *Eurotium spp. are wide-distributed fungi and have been considered a prolific source of bioactive natural products. In order to assess biological properties of plant-associated fungal strains belonging to Eurotium in Vietnam, we evaluated in vitro activities of six fungal isolates (symbolized as C1, C2, C3, C6, C7 and C8) and determined their taxonomic characteristics. Amongst all fungal strains, C1 and C8 were recorded to have significant radical scavenging capacity, with SC50 values of 96.07 and 121.12 µg/mL, respectively. Furthermore, C1 also demonstrated a slight anti-inflammatory property. Subsequently, these two strains were classified as Eurotium cristatum fungi based on molecular and morphology identification, in combination with biochemical properties, includings pH and salinity tolerance range as well as enzymatic activities. Remarkably, the fungal strains were safe to test animal. These results highlight the application prospects of studied fungi in fermentation of different tea substrates for domestical value-added products.*

Key Words: *Eurotium cristatum, anti-oxidant, anti-inflammatory, biochemical and biophysical properties*

Scum forming Cyanophycean algae from Bori Dam, Jalgaon (M.S.)

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Abstract: *Stagnancy in water reservoir promotes algal growths on surface of water. They produce scum on water surface. Algal members belonging to Cyanophyceae are observed dominant. Due to fast multiplication rate, and mucilage production, they readily form scum. This relates to biological pollution of water. Analysis of Bori Dam water is screened for to record scum forming algae. In present report 25 taxa is taxonomically enumerated belonging to Cyanophyceae.*

Key Words: *Scum, Cyanophyceae, Algae, Bori Dam, Jalgaon*

Review for a SaaS based cloud attack

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Abstract: *In today's world web applications are integral part of our day today life. Currently there are infinite numbers of web users around the world. These web applications allows users to use the services provided by them upon just a simple clicks from anywhere in the world. Due to rapid growth as well as competition in the business the service providers are making use of the web applications to attract the user. Some of the common examples of the web applications are banking applications, social networking applications, ecommerce applications etc. There exists a variety of attacks that imposes threat on these web applications. One of such attack is known as SQL Injection attack. Research has shown that about 64% of the overall web applications running worldwide are prone to SQLIA. SQL injection is a SQL code injection technique, which forces the database to execute malicious SQL commands that can perform unwanted actions on the underlying database such as getting access to private information or even deleting the entire tables or the database itself. So the prevention against such an attack is must for the web applications. Various research work in this area have been carried out so as to provide better and more accurate defence mechanism against SQLIA, but still the incident of SQLIA are reported time and again even with big cloud service providers. This paper reviews some latest work from some of the best journals in this area.*

Key Words: *SQL injection attack(SQLIA), Cloud Security, Machine Learning, SQL injection vulnerability, Web application, Structured Query Language*

Mobile Cloud Computing : Taxonomy and Challenges

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Abstract: *Mobile cloud computing is a combination of three types of technology. In which the first is mobile computing, the second is cloud computing and the third is wireless technology. Mobile cloud computing has become a very important and advanced computing technology in today's time, But mobile devices are still affected by many kinds of challenges or Issues. There is a problem of storage in this, the problem of security, the problem of privacy remains the problem of connectivity. Mobile cloud computing is being used to overcome these problems, so it is necessary that our mobile cloud computing is very secure because at present work is being done in many areas, such as in the field of education, in the field of business, in the field of health, etc., With the help of mobile devices. Due to which there are many security issues, till through this paper, we have study what is in it. This type of challenges can be seen and can be taken for research in the future.*

Key Words: *Mobile cloud computing, Cloud computing, challenges, security, privacy.*

Extraction and anthelmintic activity of Areca catechu leaves

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Abstract: *In the current study, an effort has been made to standardise the pharmacognosy and evaluate the phytochemistry and anthelmintic activity of Areca catechu leaves. A preliminary phytochemical screening was done on the leaf extract. In this study, the anthelmintic properties of an Areca catechu leaf extract were examined against Pheretima Posthuma (Indian earthworm). Using solvents like Acetone + Aqueous, Petroleum Ether, and Alcohol, the powdered leaves of Areca catechu were exposed to serial extraction by maceration. In a bioassay, four concentrations of various leaf extract (25, 50, 75, and 100 mg/ml) were investigated. This involved timing the worms' paralysis and their death time. Comparing the 100 mg/ml concentration of an aqueous + acetone extract of Areca catechu leaves to the other three concentrations and piperazine citrate (10 mg/ml), significant anthelmintic action is revealed. As a standard reference medication and a control, respectively, the assay included piperazine citrate and saline water. The information gathered in the current study will be an invaluable tool for drug standardization and quality control as well as for adulterant identification and authentication.*

Key Words: *Areca catechu, macroscopy, phytochemical, Anthelmintic, Pharmacognostic.*

Design and Development of Multilinguistic talking bot for learning & educating Children for Child Abuse

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Abstract: *Today, child molestation and physical abuse are at their peak and every other day stories about a child being molested or touched inappropriately were heard. The innocent child doesn't even know they got molested or it is a crime if someone is doing that. Children who fall prey to this are usually below six years of age. It is time to teach them about this in the early stage of life. It is a terrible subject to talk about in our society, and parents also feel discomfort educating their children about these issues. Considering the child's age and teaching them by learning, playing, and growing, a one of it kind toy was developed in the current study, using Design Thinking methodology to make children's aware of these sensitive activities. Since the best friend of any kid were their toys and so an intelligent bot having features similar to humans were designed which can teach them about the good touch and bad touch and also has many features like voice reversal, can speak poems, alphabet, body parts, and other cultural bhajans with multilinguistic features were made. This toy can help them as well as their teachers to teach them and make them aware in interactive ways. There was no such type of multilinguistic intelligent bot with many features in the commercial market. Currently, the testing is going on in the nearby schools, and later it can be planned for commercialization the IPR was already filed. This will also lead to the foundation for teaching sex education in the later stage of life. Currently, Hindi and English were used later; any number of languages can be incorporated into this because of the modular and storage-based electronics used in the toy.*

Key Words: *Child Abuse, Design Thinking, Multilinguistic Toy, good touch & bad touch*

An Intervention Study to Analyze Influence of Genetic and Environment on Intelligence of Twins in Early Childhood

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Abstract: *Genes accounted for 50-67 per cent in intelligence of twins during early childhood period. Psychological traits like intelligence are highly heritable. Twins study has planned with aim to assess the influence of genetic and environment on intelligence of twins from 3-6 years. The descriptive and experimental research design was used to conduct the intervention twin study. The sample size for present study comprised of 150 pairs of twins with the age group 3-6 years from two districts, namely: Bhiwani (N = 174) and Hisar (N = 126) of Haryana State. Stanford Binet Intelligence Scale (Terman and Merrill, 1960), Home Observation for Measurement of the Environment (HOME) (Caldwell and Bradley, 1984) and Early Childhood Environment Rating Scale (Thelma et al. 2005) were used to measure intelligence, home environment and preschool environment of twins respectively. Heritability estimate was used to examine the genes contributed to shape the intelligence of twins in early childhood period. The result of heritability estimates revealed that the heritability estimates of intelligence was ranging from 50 percent to 67 percent from the age group 3-6 years and remaining 33 to 55 per cent variations in intelligence of twins was attributed to environmental factors. The home environmental aspects and preschool environment were also significantly associated with intelligence of twins in early childhood. The intervention programme with various activities to improve the intelligence of twins also enhances the intelligence of twins in early childhood.*

Key words: *Genetic, Heritability Estimate, Home and Preschool Environment, Monozygotic Twins, Dizygotic Twins, Intervention Programme*

A Study on Nano Pre Generalized Pre Regular Continuous and Nano Pre Generalized Pre Regular Irresolute Functions in Nano Topological Spaces

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Abstract: *We have defined a new class of sets in Nano topology called Nano Pre Generalized Pre Regular Closed (briefly Nano pgpr closed) sets in Nano topological spaces. Also, Nano Pre Generalized Pre Regular Open (briefly Nano pgpr open) sets, Nano Pre Generalized Pre Regular neighborhood(briefly Nano pgpr nbd) and its operators in Nano topology were studied by M.Manisha and Dr.M.Anitha. This paper is committed to induct and constructs Nano Pre Generalized Pre Regular Continuous (briefly N-pgpr Continuous) functions and Nano Pre Generalized Pre Regular Irresolute (briefly N-pgpr Irresolute) functions in Nano topological space. Also, we discussed its properties with appropriate example for N-pgpr Continuous and N-pgpr Irresolute functions in Nano topological spaces to understand the concept clearly. Further we have investigated some of its characteristics.*

Key Words*: Nano pgpr open set, Nano pgpr closed set, Nano rg*closed set, Nano rg* open set, Nano pgpr continuous, Nano pgpr irresolute.*

RESOURCE ALLOCATION MANAGEMENT AND NODE-LEVEL FAULT TOLERANCE USING ADAPTIVE PARTICLE SWARM OPTIMIZATION AND FIRST FIT HEURISTIC ALGORITHM OVER GRID COMPUTING

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Abstract: *Grid Computing Systems, with their focus on Creative applications, high-performance orientation and large-scale resource sharing, have emerged as a significant new field. One of the important goals in any computational grid environment is to achieve effectual allocation with fault tolerance to complete the task on time. Optimal resource allocation and the fault tolerance system's failure rate remain a problem in the current system. To address the abovementioned issues, The Fit First(FF) heuristic algorithm and the Adaptive particle Swarm Optimization (APSO) algorithm are proposed in this research to improve grid system efficiency and resource allocation. The proposed system involves resource allocation using the APSO algorithm, path and node-level fault tolerance and multiple resource formation using the FF heuristic algorithm for better efficiency. Consider the number of tasks, number of resources and number of grid users at first when considering grid computing. The APSO algorithm is used to select more optimal resource efficiently in this work, and it is used to control resource allocation. The optimal tools for the user requirements are chosen by generating objective functions using the best fitness value.*

Key Words: *Grid computing, Adaptive Particle Swarm Optimization (APSO) algorithm, Fit First (FF) heuristic algorithm, fault tolerance, resource allocation.*

Chromosomal mediated Colistin Resistance gene *MCR-1* among Gram Negative Clinical Isolates in Jaipur, Rajasthan, India: First Report

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Abstract: *Recently, discoveries of a chromosomal mediated gene (MCR-1) responsible for resistance against colistin spread globally have apprise the enhanced intimidation of the proximate highlight of pan-drug-resistant gram negative bacteria. The MCR-1 gene encodes a membrane bound Zn^{2+}-metallo-enzyme, MCR-1, which catalyses phosphor-ethanolamine transfer onto the bacterial lipid A, designing bacteria resistant to colistin, a last line antibiotic. This study was design to investigate the emergence of MCR-1 gene in various gram negative bacteria isolated from clinical samples. A total number of 215 multi-drug resistant gram negative isolates were collected from various clinical samples like urine, blood, pus, endotracheal tube and sputum etc. The resistance against colistin was screening by colistin broth disk elution method and confirmed by micro-broth dilution methods as per CLSI guidelines. Colistin-resistant isolates were tested by PCR for the presence of MCR-1 gene. Out of total no of samples MCR-1 gene was detected in Escherichia coli 1.39%, Pseudomonas aeruginosa 0.93% and Klebsiella pneumoniae 0.46%. The overall presence of MCR-1 gene was 2.79%. The detection of the MCR-1 gene among clinical isolates from human isolates emphasis the imperious for epidemiological surveillance to beat the improper harness of colistin and prevent foreclose spread of resistance to this last line antibiotic.*

Key Words: *MCR-1, PCR, Colistin resistance, Clinical Isolates.*

Calculation of Mean: Utility of Kandari's Formula

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Abstract: *In this research work, a statistical formula known as Kandari's formula is devised. In comparison to previous methods, Kandari's formula offers a faster and easier way to determine the mean of grouped data. Traditional approaches such as the step-deviation method and the assumed mean method, which claim to make difficult computations simple, have a well-known flaw: they are rather lengthy. Because of this flaw, such approaches may not be able to find the mean of grouped data with huge numbers without the use of a pen and paper. Furthermore, these procedures are rather extensive. This is when Kandari's formula comes into play. In comparison to other techniques of finding the mean of grouped data, Kandari's formula is simple to learn, brief, and easy to remember. In the case of large values, Kandari's formula is also much faster and easier than the step deviation technique. Here, Kandari's method fixes this flaw and promises to cut out hard calculations that aren't needed and speed up the whole process.*

Key Words: *Mean, Grouped data, Statistics.*

Comparative Study of Traditional and Vedic Multiplication Method at upper primary level

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Abstract: *Though Mathematics is an indispensable subject, it is regarded as difficult one by majority of students. Most of them experience difficulties in the process of multiplying, try solving mathematical problems but still accuracy is not ensured. One of the reasons behind this is the traditional methods of solving equations. The project here focuses on the comparison between traditional technique and the Vedic technique in terms of multiplication. The study involved the Students of class VI to VIII i.e. between 11 to 14 years of age-group. After identifying the students on the basis of their level of achievement in Mathematics, they were divided into two groups of 50 in each. T-Gr. group was assigned 5 questions of multiplication using the traditional techniques, while the V-Gr. had to apply the Vedic technique to solve five questions. Time of solving the questions by each group was recorded. The Vedic and traditional techniques were explained. A sample is as under:*

(2×1) type of question

Traditional method	Vedic method	Clarification
97×88	97×88	
97 ×88 776 776× 8536	97-03 88-12 (88-3) / (-3) (-12) 85/36 8536	Base=100 Negative Deviation from base RHS = (-3) (-12)=36 LHS 97-12 = 85 88-3 = 85

It was found that Vedic technique benefitted the students of all levels, for; by using the Vedic technique, the students solved the questions in less time, the frequency of errors committed by them was also less. They were found to be more confident and enthusiastic too. If multiplication activities are done by Vedic method which is beneficial, effective and interesting than traditional method in every situation, then students will be completely sure about the correctness of the product. If practice is done, then the students will develop the confidence of giving error free product in multiplication of large numbers and at the same time interest in the work will also remain.

Icthyo-Faunal Diversity and Conservation Strategies of River Siang in Arunachal Pradesh, India

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Abstract: *The unique topography of North-East India and watershed pattern is an attractive field for Icthyological studies. This region has already recognized as a global spot of freshwater fish diversity. A great numbers of species have been reported from most of the North-Eastern region states. River Siang is the one of the major river of Arunachal Pradesh. The present study on Icthyofaunal diversity of River Siang in Arunachal Pradesh was carried out from June 2012 to July 2013. Fishes are very important from the biodiversity point of view. The present Studies on River Siang reveals the presence of 82 (Eighty Two) species of fishes belonging to 8 (Eight) orders, 24 (Twenty Four) families and 53 (Fifty Three) genera. Cypriniformes dominates the whole river and found in higher numbers and Beloniformes and Tetradontiformes are found in less numbers. Conservation programmers help fish production to be more sustainable while at the same time maintains diversity. Conserving diversity also improves the likelihood maintaining minimal viable populations of rare and late successful species. Maintaining icthyodiversity is important because it is not always possible to identify which individual species are critical to aquatic ecosystems sustainability.*

Key Words: *Fish Diversity, Freshwater, River Siang, Arunachal Pradesh.*

A case study and survey of cancer from Lunglei District of Mizoram, northeastern India

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Abstract: *The present study was carried out on cancer patients at Lunglei District of Mizoram, northeast India from 2015-2020. The study highlighted the occurrence of 28 different types of cancer with a total of 1033 cancer cases within a period of 6 years. Stomach cancer account for the highest number with a total 166 cases followed by oesophagus cancer at 140 cases. Lung cancer turns out at 3rd position with 123 cases. The present study also reported the most frequent cases of cancer among 50-59 age groups which was at 26.43 % , followed by 60-69 age groups which accounts for 24.78 %. 40-49 age groups come at third position which accounts for 17.04 %. The study also highlighted the frequency of cancer cases among the male and female patients which stood at a total of 515 cases in males as against 518 cases in females.*

Key Words: *Obesity, Lifestyle, Cancer, Carcinogen, Lunglei*

On the Estimation of Cure Fraction using Power Gompertz Distribution under Bayesian Approach

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Abstract: *The cure rate models have demonstrated, beyond doubt, their utilitarian value for analysis of data pertaining to long term survivors in diseases like cancer, HIV et al. In the present paper, we have estimated cure fraction using Power Gompertz distribution, in the presence of covariates and censoring under Bayesian framework. Using the developed model, Bayesian analysis of a data set related to patients with breast cancer has been done. The standard MCMC techniques in OpenBUGS Software have been used to analyze the data.we have also identified the prognostic factors for breast cancer data.*

An Appraisal Of Scope for Small holder dairy Value Chain in India

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Abstract- *This study assessed the needs of Emerging smallholder dairy value chain in Uttar Pradesh by using Non Probability Sampling technique through structured interview schedule.The sample size consisted of 98 respondents who were small holder dairy farmers of the areas across the Varanasi and Chandauli districts.The study revealed that in majority of farms the decision makers are male (79.80%) most of respondents (39.40%) belonged to higher age group (56-70 years) followed by mid age group (41-55 years). Majority (92%) of population of respondents had working experience of 11-20 years with 100% of the surveyed population having dairy farming as the secondary source of income. With average animal holding of 2 milking animals the animal housing pattern available with 98% respondents was Thatched Roof with mud floor and 100% of surveyed population following tied up stall feeding with median feed expenditure of INR 3000-3500 per Month. Current median yield for milk was 5 Liter, average fat%, SNF% & are not available as the farmers were not aware and were not monitoring them. 80%of milk produced in the region is utilized for Khoa (a condensed milk product) production by the farmers themselves rest 20 % of production is either poured to the local vendors who then further prepare Khoa or pour to cooperative dairy .Market Penetration of animal feed category is 100%, with>10 brands of feed available. Farmers are bound to rely on market feed due to constrained availability of quality fodder and lack of information about Balanced Ration.Unaided top of mind awareness is highest for cooperative feed followed by Private Brands. 52% of farmers being aware about mineral mixture only 5 farmers are using it due to lack of availability, quality concerns and no awareness about accessing the effects and results of use of mineral mixture on animal health. The respondents considered low quality of feed raw materials (97%), issues ofsuboptimal fertility (91%), incidences of production related diseases (31%) and sole dependence for consultancy on peer farmers (87%) as hurdles for dairy farming entrepreneurship in small holder farmer segments. They opined that better veterinary help (75 %), assuring reliable supply chain of quality feed additives and supplements (50%) improved access to market (80%) and providing awareness, technical assistance and need-based training (97%) could help small holder farmers to takeup entrepreneurship. The study concluded that small holder dairy segment dairying has very large scope (54.94%) for entrepreneurship if provided with proper handholding support, training and supply chain of animal health products and market linkage.*

Key Words*: smallholder, Value chain, stall feeding, Khoa, Mineral mixture.*