Abstract Book

International Conference On

'EDUCATIONAL RESEARCH & INNOVATION'

Venue: Mudo Tamo Memorial College

Date: 8th February, 2026

Mode: Online/Offline (Hybrid)

Organized by

MUDO TAMO MEMORIAL COLLEGE, ZIRO (ARUNACHAL PRADESH)

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The International Conference on Educational Research & Innovation (ICERI) is a leading global forum that brings together educators, researchers, policymakers, industry experts, and innovators to explore emerging trends and transform the future of education. The conference aims to foster collaboration, share cutting-edge research, and highlight innovative practices that address the evolving needs of learners in a rapidly changing world.

ICERI provides a dynamic platform for presenting original research, discussing contemporary educational challenges, and showcasing breakthrough solutions in teaching, learning, curriculum development, technology integration, and educational leadership. Participants have the opportunity to engage in keynote sessions, interactive workshops, research paper presentations, panel discussions, and networking events designed to inspire new ideas and strengthen global partnerships.

The conference embraces diversity and encourages contributions from various disciplines and educational settings—including early childhood, K–12, higher education, vocational training, and lifelong learning. By connecting scholars and practitioners from across continents, ICERI promotes the exchange of knowledge and supports the creation of innovative, inclusive, and equitable education systems worldwide.

The Conferences serve as key gatherings that bring together professionals from various fields to share ideas, acquire knowledge, and foster relationships. They provide invaluable opportunities for networking, gaining insights, and staying informed about industry, humanity, science trends. The objectives of international conferences typically emphasize promoting collaboration and facilitating knowledge exchange among global professionals. Attendees can also engage in workshops, panel discussions, and keynote presentations led by industry experts.

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CONFERENCE SCHEDULE

8th February, 2026 (One day, Online/Offline Hybrid Mode)

Time	Event	Venue
08:00 AM – 09:30 AM	Registration	Registration Desk
09:30 AM – 10:30 AM	Conference Inauguration	Conference Hall
10:30 AM – 1:00 PM	**Key Note Lecture**	Conference Hall
01:00 PM – 02:30 PM	Lunch Break	
02:00 PM – 04:00 PM	**Key Note Lecture**	Conference Hall
04:00 PM – 06:00 PM	Poster/Paper Session	Conference Hall
	Prize Distribution	Conference Hall

Lecture Schedule

			Time
1	Dr Gulshan Kumar	Cyber security Awareness	10:30 AM – 11:00 AM
2	Dr. Rajesh Saini	NEP 2020, Transforming India's Education Landscape	11:00 AM – 11:30 AM
3	Dr. Sushil Bhadula	Hydro biology of Ganga river	11:30 AM – 12:00 PM
4	Dr. Ankur Nehra	ANCIENT INDIAN VEDIC MATHEMATICS (AIVM) IN MODREN LIFE	12:00 PM – 12:30 PM
5	Mr. Durgesh Mishra	Educational Research and Innovation: Reimagining Teaching and Learning in the Digital Age	12:30 PM – 1:00 PM
		LUNCH	
6	Dr. Monika Chaudhary	Educational research and innovation	2:30 PM – 2:50 PM
7	Prabhjot Kaur	PCR cycle Sequencing	2:50 PM – 3:10 PM
8	Dr. Pratik Gupta	Role of vedic mathematics ibn modern life	3:10 PM – 3:30 PM
9	Dr. Madhu	Womens in Panchayati Raj System	3:30 PM – 3:45 PM
10	Jyoti Rani	Consumer Behaviour on Nutritional Aspect	3:45 PM – 4:00 PM

PAPER & PRESENTATION BY PARTICIPANTS

4:00 PM – 6:00 PM

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To Explore the Potential Applications of These Biologically Synthesized Nanoparticles in Electronic and Optical Devices

Raman Kumar

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Abstract: Biological nanoparticles present an environmentally friendly way of producing materials for advanced electronic and optical devices. This research investigates bio-reduced and bio-stabilized (green) nanoparticles. Eco-friendly methods of creating nanomaterials require less toxic waste and allow for greater compatibility with fabrication techniques used in the construction of electronic and optical devices. The nanoparticles produced through this process have a well-controlled size distribution, a high degree of crystal structure, and a stable surface molecular composition (functionalization). The electrical properties of the nanoparticles support the idea of increased charge transport capability with nanoscale electronic components. The optical characteristics of these nanoparticles provide flexible control over the bandgap energy range as well as an increase in the ability to absorb light.

The surface morphology of the nanoparticle material has a significant impact on both the optical response and the electronic performance. The bio-synthesized nanoparticles demonstrate exceptional dielectric, photoluminescent, and conductive properties under various environmental conditions. The stabilizing action of the biological capping agents on the nanoparticle surface enhances their stability for functional applications. The characteristics of the bio-synthesized nanoparticles may lead to a new generation of electronic and optical sensor technologies, photodetectors, and optoelectronic devices. Thus, this research illustrates the importance of using eco-friendly processing techniques in the development of next generation nanoelectronic products, as well as demonstrating the potential for eco-friendly nanomaterial usage for future electronic and optical technology development.

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To identify active larvicidal compounds using chromatography and spectroscopic techniques

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Abstract: In order to create a more environmentally sound alternative to chemical pesticides, we are looking for new ways to develop pesticides from natural sources. This paper describes an experiment to isolate larvicidal components from various plant extracts, isolating the active constituents using a combination of chromatography and spectroscopic methods. The extracts were fractionated using column chromatography and analysed for biological activity against mosquito larvae. The active fractions were then analysed further to confirm the identity of the specific compounds producing larvicidal activity. By combining spectroscopic methods with traditional chromatography methods, it was possible to identify the larvicidal components quickly and accurately. This type of analytical approach will support the development of new environmentally friendly ways to control mosquito populations.

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Thermodynamic Functions of tri substituted benzaldehyde Derived from Vibrational Spectroscopy

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Abstract

Background

Thermodynamic functions assist in understanding the stability and viability of a molecular system. Information obtained from vibrational spectroscopy provides direct information about the population distribution and energies of vibrational modes. The substituents on substituted benzaldehydes have a significant impact on the vibrational contributions, especially at elevated temperatures.

Objective

The study derived thermodynamic properties of 2-hydroxy-3,4-dimethoxybenzaldehyde (a compound containing intramolecular hydrogen bonding) based on measured vibration data over an extended range of temperatures (100 K to 1500 K). The goal of this work was to provide a visual representation of changes in heat capacity (C), entropy (S), Gibbs free energy (G) and Helmholtz free energy (A) for the target compound as a function of temperature.

Methods

The basic infrared and Raman frequencies were used to get an overview of the vibrational data. The statistical thermodynamic approach of RRHO was applied using the ideal gas standard assumption. The thermodynamic properties were developed over the same temperature interval throughout the study.

Results

As the temperature increased, the enthalpic value went up in a gradual and orderly fashion resulting from the continuing progression of mode excitation that occurred with increases in

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temperature. The change in entropic value was not uniform, but there was increasing entropy from additional low-frequency modes associated with Methoxy. Increases in the values of Gibbs and Helmholtz free energy resulted from increasing temperature; the more negative the value of the -TS term, the lower the Gibbs and Helmholtz free energy values. The presence of hydrogen bonding at low temperatures helped to balance the greater thermodynamic contributions from hydrogen bonding to stabilised conformations.

Comparison with Literature

Increase in H and S observed are consistent with standard thermodynamic statistical expectations. G (Gibbs Free Energy) decrease is consistent with classical Gibbs Free Energy relationships at a constant pressure. A (Helmholtz Free Energy) decrease is also consistent with Helmholtz stability behaviour under a constant volume constraint. A logical increase in Entropy due to substitution is consistent with previously reported trends observed in the density of one or more Aromatic Derivatives.

Conclusion

This substituted benzaldehyde could be reliably assessed by determining thermodynamic functions, using vibrational spectroscopy. The low temperature contributions to thermodynamic functions were affected by the methoxy group on the benzaldehyde and the existence of an intramolecular hydrogen bond. The dataset can be used in the modelling, comparing and validating of other similar aldehydes.

Keywords: Thermodynamic functions; Vibrational spectroscopy; Enthalpy; Entropy; Gibbs free energy; Helmholtz energy; Substituted benzaldehydes

मालदा के रेशम उद्योग से बिहार में आर्थिक एवं व्यापारिक लाभ का महत्वपूर्ण योगदान : एक विश्लेषणात्मक अध्ययन

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भारत में रेशम उद्योग प्राचीन काल से ही ग्रामीण अर्थव्यवस्था, हस्तशिल्प और व्यापार का एक सशक्त माध्यम रहा है। पूर्वी भारत में पश्चिम बंगाल का मालदा जिला रेशम उत्पादन एवं व्यापार का एक प्रमुख केंद्र माना जाता है। वहीं, भौगोलिक निकटता, ऐतिहासिक संपर्क और व्यापारिक निर्भरता के कारण बिहार की अर्थव्यवस्था और व्यापार पर मालदा के रेशम उद्योग का महत्वपूर्ण प्रभाव देखने को मिलता है। यह प्रभाव केवल वस्त्र व्यापार तक सीमित न होकर रोजगार, कुटीर उद्योग, निर्यात और सामाजिक-आर्थिक विकास तक विस्तृत है।

मालदा जिला मुख्यतः तसर, शहतूत और एंडी रेशम के उत्पादन के लिए प्रसिद्ध है। यहाँ का रेशम उद्योग कच्चे रेशम उत्पादन से लेकर सूत कातने, बुनाई और तैयार वस्त्र निर्माण तक एक व्यापक मूल्य श्रृंखला प्रस्तुत करता है। बिहार के कई जिले जैसे भागलपुर, बांका, मुंगेर, कटिहार और पूर्णिया इस उद्योग से प्रत्यक्ष एवं अप्रत्यक्ष रूप से जुड़े हुए हैं। विशेष रूप से भागलपुर, जिसे "रेशम नगरी" कहा जाता है, मालदा से कच्चा रेशम एवं तकनीकी संसाधन प्राप्त कर अपने वस्त्र उद्योग को सुदृढ़ करता है।

आर्थिक दृष्टि से, मालदा के रेशम उद्योग ने बिहार में रोजगार सृजन में उल्लेखनीय योगदान दिया है। बिहार के सीमावर्ती क्षेत्रों के हजारों कारीगर, बुनकर और व्यापारी मालदा से कच्चा माल खरीदकर स्थानीय स्तर पर बुनाई और विपणन करते हैं। इससे न केवल आय के स्रोत बढ़े हैं, बल्कि ग्रामीण क्षेत्रों में पलायन की समस्या भी कुछ हद तक नियंत्रित हुई है। महिला श्रमिकों की भागीदारी इस उद्योग में विशेष रूप से उल्लेखनीय है, जिससे महिला सशक्तिकरण को भी बढ़ावा मिला है।

व्यापारिक दृष्टि से, मालदा-बिहार रेशम व्यापार ने अंतर्राज्यीय व्यापार नेटवर्क को मजबूत किया है। बिहार के व्यापारी मालदा के रेशम उत्पादों को स्थानीय, राष्ट्रीय और अंतरराष्ट्रीय बाजारों तक पहुँचाते हैं। इससे

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बिहार को व्यापारिक कर राजस्व, बाजार विस्तार और निर्यात संभावनाओं में वृद्धि का लाभ मिला है। विशेष रूप से हथकरघा और हस्तनिर्मित रेशमी वस्त्रों की मांग ने बिहार के पारंपरिक उद्योगों को नई पहचान दी है।

इसके अतिरिक्त, मालदा के रेशम उद्योग से बिहार में तकनीकी ज्ञान और कौशल हस्तांतरण भी हुआ है। बुनाई तकनीक, रंगाई प्रक्रिया और डिजाइन नवाचारों का आदान-प्रदान बिहार के कारीगरों की दक्षता बढ़ाने में सहायक सिद्ध हुआ है। सरकारी और गैर-सरकारी संगठनों द्वारा संचालित प्रशिक्षण कार्यक्रमों में मालदा के विशेषज्ञों की भागीदारी ने बिहार के रेशम उद्योग को आधुनिक बनाने में भूमिका निभाई है।

हालाँकि, इस सहयोगात्मक संबंध में कुछ चुनौतियाँ भी हैं, जैसे कच्चे रेशम की कीमतों में उतार-चढ़ाव, परिवहन लागत, और बाजार प्रतिस्पर्धा। फिर भी, यदि दोनों राज्यों के बीच नीतिगत सहयोग, आधारभूत संरचना विकास और विपणन समर्थन को सुदृढ़ किया जाए, तो यह रेशम उद्योग क्षेत्रीय आर्थिक विकास का एक आदर्श मॉडल बन सकता है।

निष्कर्षतः, मालदा का रेशम उद्योग बिहार में आर्थिक एवं व्यापारिक लाभ का एक महत्वपूर्ण स्रोत रहा है। यह उद्योग न केवल रोजगार और आय बढ़ाने में सहायक है, बल्कि सांस्कृतिक और औद्योगिक संबंधों को भी मजबूत करता है। भविष्य में सुनियोजित प्रयासों के माध्यम से यह सहयोग पूर्वी भारत की समग्र आर्थिक प्रगति में निर्णायक भूमिका निभा सकता है।

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STUDY ON CHAOS IN ROSSLER SYSTEM

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Abstract: Chaos theory is based on simple deterministic systems that demonstrate random behavior. In a chaotic system, even tiny changes in initial conditions eventually lead to major changes in state. This is called "sensitive dependence on initial conditions". This feature of chaotic systems is used in this for improving the security of analog transmission. The seminar consists of parts, which are: - general review - orbit diagram - time series, phase trajectory, power spectra and Poincare map analysis for selected values of parameter c - the attractor reconstruction, estimation of correlation dimension and compatison of the reconstructed system with the original attractor

Keywords: CHAOS IN ROSSLER SYSTEM, VARIATION, BIFURCATION DIAGRAM

A brief about the Role of Artificial Intelligence (AI) in College Education

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Artificial Intelligence (AI) plays a pivotal and transformative role in college education by significantly enhancing various aspects of teaching, learning, practical and administrative activities. AI-driven educational platforms analyze individual student data, including learning styles, pace, and performance, to adapt content delivery. This customization ensures that students engage with material that matches their unique needs, thereby improving their comprehension and retention. For example, adaptive learning systems can modify the difficulty level of assignments or suggest supplementary resources, thereby fostering a more student-centered approach to education. Intelligent tutoring systems represent another crucial application of AI in academic enviornment. These systems provide real-time feedback and tailored support, guiding

students through complex subjects and enabling them to master challenging concepts. By simulating one-on-one tutoring, AI tools help bridge gaps in understanding outside the traditional classroom setting and offer continuous assistance that complements instructor-led instruction.

Beyond direct student interaction, AI enhances educators' effectiveness by automating administrative and evaluative tasks. Automated grading systems reduce the time instructors spend on routine assessments, allowing them to focus more on curriculum development and personalized student engagement issues. Furthermore, AI-powered analytical tools process vast amounts of student performance data to identify learning gaps, predict academic risks, and recommend targeted interventions. This data-driven insight supports faculty in refining their instructional strategies and improving overall educational outcomes of the course. AI also fosters collaborative learning environments through virtual platforms that facilitate peer interactions, discussions, and group projects. AI-enabled environments can moderate discussions, provide prompts, and assess participation, thereby creating dynamic and inclusive spaces for knowledge exchange. Additionally, AI technologies enhance accessibility by offering adaptive tools such as speech-to-text, text-to-speech, and other assistive technologies that support students with disabilities, ensuring equitable learning opportunities. In administrative contexts, AI streamlines operations, such as enrollment management, resource allocation, and student advising. By automating routine processes and providing predictive analytics, AI helps institutions to optimize resource use and improve student retention rates.

Overall, the integration of AI into college education promotes a more efficient, inclusive, and data-informed academic environment. It prepares students not only by enhancing their immediate learning experiences but also by equipping them with the skills and familiarity needed to thrive in increasingly technology-driven professional environments. The continuous evaluation of AI applications promises ongoing improvements in educational quality and accessibility, making AI an indispensable component of modern higher-education.

Keywords: Artificial Intelligence, Education, Learning, Tool, Academic

A Study on Awareness and utilization of AI tools for skill enhancement among B .Ed. Students Teachers

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Abstract: Artificial Intelligence (AI) has emerged as a transformative force in the education sector, bringing notable changes to teaching, learning, and assessment practices. In teacher education, AI-based tools such as intelligent tutoring systems, automated content development platforms, adaptive learning technologies, virtual teaching assistants, and AI-supported evaluation tools offer significant opportunities for enhancing the professional and pedagogical skills of future teachers. In this context, the present study seeks to examine the level of awareness and the extent of utilization of AI tools for skill enhancement among B.Ed. students, who play a crucial role as prospective educators. Gaining insight into their awareness, usage patterns, and perceptions of AI is essential for ensuring meaningful and effective integration of technology within teacher education programs. The study adopts a descriptive survey approach to explore the awareness and application of AI tools among B.Ed. students enrolled in teacher education institutions. A representative sample of B.Ed. trainees was selected using a random sampling technique. Data were collected through a structured questionnaire specifically designed to assess students' understanding of basic AI concepts, familiarity with various AI-based educational tools, frequency and purpose of usage, and the perceived role of these tools in developing essential teaching-related skills. These skills include lesson planning, classroom management, communication, assessment practices, creativity, critical thinking, and overall professional competence. The questionnaire also examined students' attitudes toward AI, perceived usefulness, ease of use, and challenges faced during the adoption of AI tools in academic and teaching-related activities. The findings of the study reveal that a considerable proportion of B.Ed. students possess a general awareness of AI; however, their knowledge is largely confined to commonly used and easily accessible applications such as chatbots, content generators, digital assistants, and presentation tools. Awareness of more advanced AI applications in education—such as adaptive learning systems, learning analytics, virtual classroom simulations, and AI-driven assessment tools—was found to be relatively limited. In terms of utilization, the results indicate that B.Ed. students primarily employ AI tools for

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academic support purposes, including completing assignments, preparing lesson plans, developing teaching aids, and creating presentations. The use of AI for deeper professional development activities, such as reflective teaching practices, classroom simulations, personalized student assessment, and continuous skill refinement, remains comparatively low.

The study further indicates that students who regularly use AI tools perceive noticeable improvement in several professional skills, particularly in organizing instructional content, enhancing creativity, improving communication abilities, managing time effectively, and increasing confidence during teaching practice. AI tools were also viewed as helpful in reducing academic workload, offering quick access to information, and providing instant feedback that supports learning and preparation. Despite these benefits, the study identifies several challenges that hinder effective utilization of AI tools. These challenges include the absence of structured training programs, limited institutional guidance and support, inadequate digital infrastructure, ethical and privacy-related concerns, and apprehensions about excessive reliance on AI. Some students also expressed concerns that overuse of AI may negatively affect originality, independent thinking, and critical reasoning skills.

The findings highlight the necessity of systematically integrating AI literacy and skill-based training into the B.Ed. curriculum. Teacher education institutions must take proactive steps to prepare future teachers for responsible, ethical, and pedagogically sound use of AI technologies. Organizing workshops, hands-on training sessions, and providing opportunities for practical exposure to AI-enabled teaching and learning strategies can significantly enhance students' readiness to use AI effectively in classrooms. Furthermore, curriculum planners and policymakers should develop clear guidelines and frameworks that promote the balanced, inclusive, and ethical application of AI in teacher education.

In conclusion, the study underscores that while awareness and use of AI tools among B.Ed. students are gradually increasing, a substantial gap persists between the potential of AI technologies and their actual utilization for comprehensive skill enhancement. Bridging this gap through curriculum reform, institutional support, and continuous training can empower future teachers to harness AI effectively, improve teaching quality, and contribute to innovative and learner-centered educational environments.

Keywords: Awareness, utilization, AI tools, B.Ed., Skill Enhancement, Students Teachers

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"How Drug Addiction and Trafficking Changed in the Golden Triangle (2021–2025): A Health and Supply Perspective"

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Abstract: The Golden Triangle i.e. the three region Myanmar, Laos, and Thailand has changed drastically between the year 2021 to 2025 for production of illicit Drugs, supply in neighboring countries, and addiction. This study reveals the three main points- how the illegal drug trade has increased, how drug addiction has increased and supply in nearby countries and the affects of drugs use in public health and what is the role of government to meet the problem. The large-scale production and supply of synthetic drug methamphetamine (a synthetic stimulant) has gradually changed the region's heritage of producing opium and heroin. The Golden Triangle has become a global hub for meth manufacture and trafficking due to political instability and conflict especially in Myanmar's Shan state. According to reports released by the United Nations Office on Drugs and Crime (UNODC) in May 2025, 236 tones of methamphetamine were seized in East and Southeast Asia in 2024, a 24 percent rise from the previous year.

Drugs addiction has increased due to the socioeconomic vulnerabilities of border areas, such as poverty, displacement, and conflict. The consequences of this increased flow include a rise in injecting or non-injecting stimulant use, associated psychosocial harms and increased the risk of disease like HIV/hepatic C. Between the years 2021 to 2025, these three regions characterized with rise in drug production, trafficking, and addiction, especially with synthetic drugs. The countries need to come together and make plans and policy how to reduce the production and supply of these substances and control the increased web of drugs addiction for better public health.

Keywords: Southeast Asia, drug trafficking, methamphetamine, addiction, public health, supply reduction.

Literary and Political Influence of Bashir Muhammad's Works on the Division of Indian States

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Abstract: Muhammad Basheer of Vaikom (commonly known as Vaikom Muhammad Basheer or the Beypore Sultan) needs little introduction. As a writer, he is remembered for his cutting and incisive attacks on political, social and religious malpractices, his rhythmic, lyrical and evocative prose, and his revolutionary use of common idioms and conversationalist rhetoric.

There can be no mention of Basheer without mention of revolution. He was as much a product of his revolutionary times as he is a product of his rebellious spirit. It was, perhaps, the potent marriage of the two that gave birth to his unique genius.

Given the strong political and philosophical undercurrents of Basheer's work, it is essential to understand his oeuvres in the context of the social and political change in Kerala that preceded him, to which he found himself often responding:

Basheer's visage and prose verse have become synonymous with Kerala's famous egalitarian renaissance that began with Narayana Guru's social revolution at the end of the 19th century. As such, he was not only one of the leading figures of Kerala's acclaimed Literary Renaissance, which took place in the first half of the 20th century, but additionally, he was a direct beneficiary and descendent of the seminal political and social egalitarian revolution that was fought in Kerala under Guru, a revolutionary social leader.

On considerably scant financial resources, Kerala has achieved social indicators on par with some of the world's most developed and wealthy nations. Most scholars recognize this exceptional phenomenon as the direct result of the social revolution fought by Narayana Guru during the second half of the 19th century. This revolution was maintained and rejuvenated by important figures such as Basheer.

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Guru crafted the equivalent of a religious and philosophical plain language movement that had a substantial impact on Kerala's culture and cultural production. Using commonly employed Malayalam and Tamil words, he crafted an entirely new philosophical movement that was based on fundamental human equality and the denial of difference between people. Guru's ethos was simple: he held that all men are equal in essence and, most importantly, in intellectual capacity. There was no high caste or low caste, and no high culture or low culture. Knowledge was for everyone, and equally attainable by everyone. This ethos had a substantial impact on Basheer and other modernist writers in Kerala.

Before the advent of Narayan Guru, language itself was highly stratified. Words were restricted by caste, class and gender. For example, there was an upper class word for salt and a lower class word for salt. The penalty for lexical transgression for the poor man was often death. There were invisible but unassailable barriers to cultural production. Language was a strong force of social and cultural division, with the cloistering and regulation of Sanskrit and its related episteme at the epi-center of cultural hegemonies. Malayalam-language Arts and Literature were also carefully regulated by complex restrictions on meter, rhythm, and register of language.

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A study on facing problems in execution of e-commerce

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Abstract: E-commerce provides multiple benefits to the consumers in form of availability of goods at lower cost, wider choice and saves time. The general category of ecommerce can be broken down into two parts: EMerchandise & E-finance. E-commerce stands for electronic commerce. E-commerce is doing business online and electronically. The E-commerce has completely revolutionized the conventional concept of business. E- commerce deals with selling and purchasing of goods and services through internet and computer networks. This paper attempts to highlight the different challenges faced by the E-commerce in India, understand the essential growth factors required for E-commerce, describes the prosperity of ECommerce in India and retail E-Commerce sales in India. The study found that, in the world of E-commerce, the existence of the wholesalers is at the greatest risk because the producer can easily ignore them and sell their products to the retailers and the consumers. Wholesalers can take the advantage of E-commerce in establishing contracts with reputed producers and linking their business with the online. The study also found that, E-commerce provides the various types of opportunities to the wholesalers, retailers, producers and the People.

Keywords: E-commerce, Challenges, On Line Shopping, Evolution

Mental Health Awareness in Today's world

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Abstract: A critical global concern in the modern era is mental health and well-being, where rapid socioeconomic change, technological advancements, and lifestyle shifts have significantly impacted individuals' psychological health. Primary stressors today include urbanization, digital dependency, social isolation, and economic pressures, alongside the escalating prevalence of mental health disorders such as depression, anxiety, and burnout. The COVID-19 pandemic has further exacerbated global mental health crises, increasing the vulnerability of populations during times of uncertainty and instability. This paper critically examines emerging connections between mental health and lifestyle factors such as sleep, diet, and exercise. Interventions are discussed from a multidimensional perspective, encompassing pharmacological treatments, psychotherapy, digital mental health tools, and community-based programs. Special attention is given to the rise of telemedicine and mobile mental health apps, offering innovative solutions to bridge gaps in mental healthcare accessibility. Furthermore, the review underscores the importance of preventive approaches, promoting mental health literacy, reducing stigma, and fostering resilience through mindfulness, cognitive behavioral techniques, and social support systems.

Keywords: digital health, interventions, mental disorders, mental health, modern challenges, well-being

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Rabindranath Tagore as a Social Philosopher

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Abstract: Tagore was a Bengali poet, philosopher, social reformer and dramatist who came into worldwide reputation when he was honored the Nobel Prize for literature in 1913. The paper focuses on the Indian principle of philosophy, religion and art of his works are the result and appearance. The recognizable truths of Indian philosophy and religion, the worth of which it has become fashionable to disparage even in the land of their birth, are here handled with such atypical respect and profound feeling that they appear to be approximately new. The theme of social philosophy and his patriotic feeling that obviously exist in all his poems, dramas, short stories and novels. Man lives in a society with some agreeable circumstances for the growth of his character. Social philosophers have undertaken down to earth voyage in addition to seeking luck in paradise. His novels treat with social problems of an original nature the doleful situations of Hindu widows and the appearance of a new type of woman in quest of self-fulfillment. Tagore was an extremely creative Indian poet, philosopher, dramatist, novelist and educator who wrote novels, essays, plays and poems in colloquial Bengali. He was a very crucial person of the Bengal Renaissance, a cultural nationalist movement in the city. Social philosophy contemplates its attention on the communal unity of mankind and seeks to construe the importance of the social features of human life. Social philosophy is normative in the sense that it deals with the ideals of social change. As well as it advises paths for the implementation of the plans for social transformation.

Keywords: Religion, Caste, Gender, Humanism, Philosophy

Multi Criteria Decision making using instuitionistic and Pythagorean fuzzy entropies

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Abstract: Lack of certainty is a major issue in decision-making, data analysis and modeling in many fields. Soft set theory has evolved into an effective method for addressing this issue, both due to its adaptability and its ability to blend with other models for the representation of uncertainty (inclusive of fuzzy sets and its extensions). Membership-based theories alone are incompatible with slackness in the evaluations, such as those that stem from measurement errors. This issue led to the appearance of interval-valued fuzzy sets (with only membership), and afterwards interval-valued intuitionistic fuzzy sets and circular intuitionistic fuzzy sets (with both membership and non-membership), plus other extensions that allow for wider domains of the evaluations. Circular Pythagorean fuzzy sets were defined with this motivation, and here we first combine them with soft set theory. In this setting, we propose novel score and accuracy functions based on optimistic and pessimistic perspectives. This is done with the help of a decision-maker-controlled parameter that captures her/his approach to the problem. Furthermore, inspired by related models we define essential operations for the new framework, including complement, min-OR, max-OR, min-AND, max-AND, min-union, max-union, min-intersection, and max-intersection. All these tools allow us to extend decision-making strategies designed for Pythagorean fuzzy soft sets to the circular domain motivated by considerations of slackness. Finally, the study compares the proposed approach with circular intuitionistic fuzzy soft set based decision-making models to evaluate its effectiveness.

Keywords: Intuitionistic Fuzzy Sets,Entropy Measure,Multicriteria Decision Making,IF-TODIM

Interdependent of stock market and domestic macroeconomic factors in India

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Abstract: In the growing era, each country is trying to make their country sustainable growth in each field and economic growth is one of the crucial environment in the sustainable growth of the country. The stock market is one of the major determinants of the Indian economy and the movement of macroeconomic variables has a significant effect on stock prices. To verify the effect, the study used a few selected macroeconomic variables (i.e., IIP and CPI as a proxy of GDP and inflation) The GDP of the nation is one of the crucial measures that represent the economic and financial strength of the country. It is one of the significant macroeconomic determinants of the motion of stock indices in the Indian capital market (Ray, 2012; Laichena and Obwogi, 2015; Chandrashekhar et al., 2018; Othman & Al-Kassab, 2022). Here, a positive significant relationship with GDP was found with the movement of stock prices by Ray (2012); Hunjra et al. (2014); Leong and Hui (2016); Demar (2019); and Queku, Gyedu, and Carsamer (2020). For the last few years, the Indian stock market is found highly volatile and investors are facing a lot of problems with investing in particular securities at the right time. As the GDP and Inflation are the major macroeconomic elements that are influencing the Indian economy and also the Indian capital market. Incognizant investors invest their money without considering macroeconomic information and predictors. The numbers of the existing literature are depicting that the GDP is significantly influencing SP. Most of the authors found there is a favorable relationship between SP and GDP. Denying this outcome, some authors also found a negative relationship between GDP and SP. Similarly, there is a significant difference between INF and SP, and also found both positive and negative relationships between variables by some authors. The outcomes of the literature found that there is causality between the unidirectional and bidirectional relationships among variables. However, in some literature, it is found no causal relationship. Keeping consideration of the existing contradictory result, the study is trying to check the exact relationship by taking some analytical objectives as follows.

Keywords: Macroeconomic Variables, GDP, Inflation, Stock Prices

Role of Library and information Science in modern education

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Abstract: Library science is an interdisciplinary field which combines the principles and practices of library administration. The disciplines that are associated with library science are education, management, and Information technology. The main objective of any library is to accumulate, organize, preserve and disseminate information resources. The role of library science is to provide a combined service of research and teaching. It contributes to the knowledge base of professionals and helps in preparing them to achieve excellence. Library science is one field which has changed tremendously in the past 20 years which makes it more challenging than any other profession. The library science course will help in designing and improving libraries. In the digital age, the importance of librarians and library science is increasing. Library professionals are the one who are completely involved in providing information services to professionals and organizations. In the modern digital age, the need for quality and filtered information has grown up and so librarians have a major role to play. This has increased the scope for library science in this digital age. Computer literacy among library professional and more friendly system interface has resulted in unprecedented opportunities for them. These opportunities highlight the importance of library science in education.

Keywords: Library science, computer, research, modern, digital.

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Women s image in national film award

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Abstract: Media, identity and gender are being discussed all over today. They have become integral to the discipline of media studies. The reason is the popularity and diversity of media as a source of mass consumption and its influence on constructing ideas and generating debate. The media scene in India has expanded in the recent times as there is a plethora of media choices available to the audiences. Media structures and systems have also undergone a sea change with privatization and globalization. Huge corporations with their own profit motives own media houses. Media has been able to transcend borders and look at issues more holistically rather than in the context of nationalism. Hence, these developments are bound to affect the manner in which media scrutinizes and covers any issue – gender being an important one. Women are also major consumers of mass media and thus the way they are represented in media coverage is a major concern for the discipline. Several international forums have recognized the ramifications of such a transformed media environment on women‟s access to media, their role in the media structure and the presentation of their perspective in media coverage.

Cinema is for entertainment. It takes the people in a different world out of reality, out of their daily routine work. It moulds opinions, builds images and focuses on our cultural values. Hindi is the language which is mostly used in the Bollywood Industry. Millions of people go to theatres every week to watch films. The characterization of women in Indian cinema is mediocre. The fifty percent of the population in our country constitute of women and hence the way they are shown on the big screen develops their stereotypical image. A male centric approach is seen in Bollywood. It has been seen from the olden times that males have an upper hand. The themes are male centric and the heroine is not much visible in comparison to hero. Our society is based on patriarchal values so Indian cinema has been able to show women in different roles is still a question. This paper shows how a woman is displayed and her characterization in Indian cinema.

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National Film Awards increasingly highlight empowered, complex female characters, with recent winners like Rani Mukerji (*Mrs. Chatterjee vs Norway*) and past honorees such as Alia Bhatt and Kriti Sanon reflecting a shift toward strong, narrative-driven roles. President Droupadi Murmu has emphasized the need for better representation of women in jury panels and films that promote social awareness.

- **Empowered Roles:** Awards frequently honor women playing courageous or central roles, such as the 80-year-old protagonist in *Ek Tha Gaon* or mother-centric narratives like *Mrs. Chatterjee vs Norway*.
- **Diverse Recognition:** Beyond acting, recognition extends to technical and creative roles, including Best Female Playback Singer (e.g., Shilpa Rao for *Jawan* in the 71st awards).
- **Historical Significance:** Veteran actress Waheeda Rehman received the Dadasaheb Phalke Lifetime Achievement Award (2021).
- **Young Talent:** The 71st awards featured a 4-year-old, Treesha Thosar, winning for Best Child Artist.
- **Record Holders:** Shabana Azmi holds the record for most Best Actress wins (5), followed by Sharada and Kangana Ranaut (3 each).

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AI and Smart Classroom Technologies as Tools for Enhancing Learning Outcomes, Creative Problem-Solving, and Media Literacy

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Abstract: The integration of Artificial Intelligence (AI) and smart classroom technologies has significantly reshaped contemporary education by enhancing teaching effectiveness and enriching learning experiences. AI-driven tools such as adaptive learning platforms, intelligent tutoring systems, virtual assistants, and learning analytics enable personalized instruction tailored to individual learner needs, thereby improving learning outcomes. Smart classrooms, equipped with interactive boards, digital content, reliable internet connectivity, and multimedia resources, foster active participation, collaboration, and student-centered learning.

This study examines the role of AI and smart classroom technologies in enhancing students' learning outcomes, creative problem-solving abilities, and media literacy. By facilitating interactive and technology-rich learning environments, these tools promote critical thinking, creativity, and innovation among learners. AI-supported instructional strategies provide real-time feedback and data-driven insights that help students identify their strengths and areas for improvement, thus supporting effective problem-solving processes. Furthermore, the availability of diverse digital media resources within smart classrooms strengthens students' ability to access, evaluate, and use information critically, which is essential for developing media and information literacy in the digital age.

The study also highlights the evolving role of teachers as facilitators and mentors in AI-enabled classrooms, emphasizing the need for continuous professional development and digital competence. Findings from existing literature indicate that the effective integration of AI and smart classroom technologies leads to improved academic achievement, enhanced creativity, and responsible media usage among students. However, successful implementation requires adequate digital infrastructure, robust cybersecurity measures, and supportive educational policies. Overall, the study underscores the transformative potential of AI and smart classroom technologies in fostering holistic, innovative, and future-ready education systems.

Keywords: Artificial Intelligence, Smart Classrooms, Learning Outcomes, Creative Problem-Solving, Media Literacy, Digital Education

STUDY ON PROPERTIES OF DIVISOR GRAPHS OF FINITE GROUPS

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Abstract

Algebraic graph theory provides a natural bridge between algebra and graph theory by encoding algebraic relationships as adjacency structures. Among these, divisor graphs and coprime graphs represent two contrasting perspectives on integer interactions. In this paper, we investigate the structural properties of the divisor graph D_n, whose vertices correspond to the integers $\{1,2,3,\dots,n\}$ and where adjacency is defined by divisibility. Fundamental graph invariants of D_n, including connectivity, diameter, vertex degree distribution, and planarity, are examined in detail. We prove that D_n is connected for all$n \geq 1$, establish an upper bound on its diameter, identify vertex as the unique maximum-degree vertex, and characterize the precise range of $n$for which D_n is planar.

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AI-Enabled Smart Crop Yield Analysis Using Statistical Inference Techniques

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Abstract: Artificial intelligence (AI)–enabled smart agriculture requires reliable analytical frameworks for interpreting large-scale field data and supporting evidence-based decision making. Statistical inference techniques play a crucial role in validating experimental outcomes and distinguishing true treatment effects from random variability. This study presents an AI-enabled smart crop yield analysis approach using statistical inference techniques, with emphasis on the Z-test for difference between two means. Yield data from large independent samples under two phosphorus fertilizer application levels (30 kg and 15 kg P_2O_5 per hectare) were analyzed at a 5% level of significance. The computed Z-value (1.08) was lower than the critical value (1.96), indicating that the difference in mean cotton yield between the two treatments was not statistically significant. The results demonstrate that integrating AI-assisted data handling with classical statistical inference improves the reliability and interpretability of crop yield evaluation and supports smart, precise, and sustainable agricultural decision-making.

Keywords: AI-enabled Agriculture, Smart crop yield analysis, Statistical inference, Z-test, Fertilizer response analysis.

STUDY ON UTILIZATION OF CROP LOAN BY FARMERS OF KALABURAGI DISTRICT

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Abstract: Agriculture continues to be the backbone of the rural economy in India, and access to timely and adequate credit plays a vital role in enhancing farm productivity and ensuring the socio-economic welfare of farmers. This study entitled **"Utilization of Crop Loan by Farmers of Kalaburagi District"** aims to analyse the extent and pattern of crop loan utilization among farmers, identify the purposes for which loans are actually used, and assess the socio-economic and institutional factors influencing their effective utilization.

Primary data were collected from a representative sample of farmers across selected villages in Kalaburagi district through structured questionnaires and personal interviews. Secondary data from financial institutions and government reports were also incorporated. The study reveals that while a majority of farmers availed crop loans primarily for the purchase of inputs such as seeds, fertilizers, and pesticides, a considerable portion of the loan amount was often diverted to non-agricultural purposes like social ceremonies, debt repayment, and household expenses. Factors such as landholding size, education level, access to extension services, and institutional guidance significantly affected the productive use of loans.

Keywords: Crop loan, Credit utilization, Farmers, Kalaburagi district, Agricultural finance, Socio-economic factors

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डिजिटल भाासन और साइबर अपराधो पर सार्वजनिक, संवैधानिक जवाबदेहीः—नागरिको की सुरक्षा के परिपेक्ष्य में

विवेचना पाण्डेय,

असिस्टेंट प्रोफेसर—आर.के.डी.एफ. युनिवर्सिटी भोपाल (म0प्र0)

सारांशः- डिजिटल युग में सूचना और तकनीक का विस्तार अभूतपूर्व स्तर पर हुआ हैं। इंटरनेट भाोसल मीडिया और डिजिटल प्लेटफार्म ने संचार व्यापार, f”k{kk और भाासन की नई दि” ाा तय की हैं परंतु इस तकनीकी क्रांति के साथ साईबर अपराधो की चुनौतिया भी सामने आई हैं। जैसे हैकिंग साइबर ठगी डेटा चोरी, आनलाईन उत्पीड़न और फेक न्यूज और निजी गोपनियता का हनन। भारतीय संविधान और विविध ढाचां इन अपराधो से नागरिको की रक्षा के लिये निरंतर विकसित हो रहा हैं। सूचना प्रौद्योगिकी अधिनियम, 2000 दंड संहिता की विभिन्न धाराएँ और न्यायालयो के निर्णय डिजिटल सुरक्षा के संरक्षण में महत्वपूर्ण निभाते हैं। डिजिटल शासन (Digital Governance) के बढ़ते विस्तार ने प्रशासनिक पारदर्शिता, सेवा वितरण की दक्षता तथा नागरिकों की भागीदारी को सशक्त किया है। ई—गवर्नेंस, डिजिटल इंडिया, ऑनलाइन सार्वजनिक सेवाएँ और डेटा—आधारित निर्णय प्रणाली ने शासन को अधिक सुलभ और उत्तरदायी बनाने का प्रयास किया है। किंतु इसी के साथ साइबर अपराधोंकृजैसे डेटा चोरी, साइबर धोखाधड़ी, पहचान की चोरी, ऑनलाइन उत्पीड़न और सरकारी डिजिटल प्रणालियों पर हमलो में तीव्र वृद्धि हुई है, जिससे सार्वजनिक संवैधानिक जवाबदेही (Public Constitutional Accountability) की अवधारणा नई चुनौतियों के समक्ष खड़ी हो गई है।यह शोध पत्र डिजिटल शासन के संदर्भ म साइबर अपराधों से उत्पन्न संवैधानिक, विधिक एवं प्रशासनिक प्रश्नों का विश्लेषण करता है। भारतीय संविधान द्वारा प्रदत्त मौलिक अधिकारोंकृविशेषकर अनुच्छेद 14 (समानता का अधिकार), अनुच्छेद 19 (अभिव्यक्ति की स्वतंत्रता) और अनुच्छेद 21 (जीवन एवं व्यक्तिगत स्वतंत्रता का अधिकार)कृपर साइबर अपराधों के प्रभाव का विवेचन किया गया है। डिजिटल प्लेटफार्मों पर नागरिकों के व्यक्तिगत डेटा की सुरक्षा, गोपनीयता के अधिकार तथा राज्य की जवाबदेही को इस शोध पत्र का केंद्रीय विषय बनाया गया है। शोध पत्र में यह तर्क प्रस्तुत किया गया है कि डिजिटल शासन केवल तकनीकी नवाचार का विषय नहीं है, बल्कि यह संवैधानिक मूल्योंकृन्याय, स्वतंत्रता, समानता और गरिमाकृमें गहराई से जुड़ा हुआ है। जब राज्य डिजिटल माध्यमों के माध्यम से सेवाएँ प्रदान करता है, तब उस पर यह संवैधानिक दायित्व भी बढ़ जाता है कि वह साइबर अपराधों स नागरिकों की रक्षा करे और प्रभावी शिकायत निवारण तंत्र उपलब्ध कराए। सूचना प्रौद्योगिकी अधिनियम, 2000, प्रस्तावित डिजिटल व्यक्तिगत डेटा संरक्षण कानून तथा न्यायिक निर्णयों के माध्यम से राज्य की जवाबदेही के ढांचे का विश्लेषण करता है।कि साइबर अपराधों की रोकथाम हतु केवल दंडात्मक कानून पर्याप्त नहीं हैं, बल्कि पारदर्शी डिजिटल नीतियाँ, स्वतंत्र निगरानी तंत्र, न्यायिक सक्रियता तथा नागरिक जागरूकता भी आवश्यक है। डिजिटल शासन में सार्वजनिक संवैधानिक जवाबदेही को सुदृढ़ करने के लिए तकनीक, कानून और संवैधानिक नैतिकता के समन्वय की आवश्यकता है। यह शोध पत्र नीति निर्माताओं, विधि विशेषज्ञों के लिए डिजिटल युग में शासन और अधिकारों के संतुलन को समझने का एक महत्वपूर्ण आधार प्रदान करता है।

Global Security and Strategic

Dr. Narender

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Abstract: Security challenges in South Asia have long been a focal point of global attention due to the region's strategic significance, historical tensions, and diverse geopolitical dynamics. With nuclear-armed powers, unresolved territorial disputes, and transnational terrorism, South Asia remains one of the world's most volatile regions, presenting formidable obstacles to peace, stability, and development.Understanding the security landscape in South Asia requires a nuanced examination of historical legacies, contemporary threats, and regional power dynamics. This paper aims to provide a comprehensive analysis of security challenges in South Asia, with a specific focus on India's response and its implications for regional stability.The historical context of security challenges in South Asia, including the legacy of colonialism, partition, and post-independence conflicts, sets the stage for understanding contemporary security dynamics. Ongoing territorial disputes, particularly the Kashmir issue between India and Pakistan, underscore the deep-rooted tensions and historical animosities that continue to shape regional geopolitics. India's security challenges in South Asia have garnered global attention due to the region's strategic significance, historical tensions, and complex geopolitical dynamics. This paper offers a comprehensive analysis of these challenges, with a focus on India's response and its implications for regional stability. Examining the historical context, including colonial legacies and post-independence conflicts, sets the stage for understanding contemporary security dynamics. Ongoing territorial disputes, notably the Kashmir issue, underscore deep-rooted tensions shaping regional geopolitics. Contemporary threats span terrorism, insurgency, cross-border violence, and non-state actors exploiting porous borders. Groups like Lashkar-eTaiba (LeT) and Jaish-e-Mohammad (JeM) pose significant challenges, exacerbating tensions between India and Pakistan. India’s response is multifaceted, encompassing diplomatic initiatives, military modernization, and counterterrorism measures.

Keywords: South Asia, Security Challenges India, Regional Stability, Diplomacy, Counterterrorism

Women's participation in decision-making in tribal societies

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Abstract: The term "Tribe" arose at the time of Greek and before the establishment of Rome Empire. The Shillong consolation on tribal in 1962 defines tribes as "an indigenous homogenous unit, speaking common language, claiming a common ancestry living in particular geographical area, backward in technology, pre-literate, loyally observing social and political customs based on kinship. Basically Tribal community originated from one of the oldest ethnological segment of population which possesses some qualities and characteristics that makes them exceptional. Tribal people also called as aboriginal people or indigenous inhabitants or primitive people. However many tribal people employed the term for them "Aadiwasi or Upjati" but it is not recognized by government of India because it has been considered as the more political term of self reference. Some have also referred them as Vanyajati, Vanvasi, Pahari, Adimjati and Anusuchit Jan Jati etc. Mahatma Gandhi called them as "Girijan. Tribal people are generally, socially, educationally and economically deprived groups for the centuries. Though, the tribal population in India is numerically small but worth of consideration which is representing the poor people in the country. Even if government of India included tribal people in a particular section (STs) called as "schedule tribes". However, there are many communities and clans within them and completely differs from one another in terms of socio-cultural beliefs, their habits, lifestyle, and health practices, etc. It is wel known fact that the status of tribal health in India is "very poor" and is affected by the general extensive poverty, illiteracy, malnutrition, absence of safe drinking water and sanitary living conditions, poor maternal and child health services ineffective coverage of national health and nutritional services which make for the "dismal health". Article 366 (25) of the Indian constitution refers to scheduled tribes as those communities who are scheduled in accordance with Article 342 of the Constitution. This Article says that, "only those communities who have been declared as such by President through an initial public notification or through a subsequent amending Act of parliament will be considered to be Scheduled Tribes".

Key Words: Tribal Women, Socio -economic status, decision making role

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Educational Policy and Equity

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Abstract: In July 29, 2020, the Indian union cabinet approved NEP 2020, which replaced the 1986 policy. It is a through framework based on a draft written by renowned scientist and former head of the Indian Space Research Organization Dr. K. Kasturirangan. This innovative idea has the potential to completely change India's educational landscape and turn our country into a just and dynamic knowledge society by giving everyone access to top-notch education. In order to accomplish developmental goals, NEP 2020 plays a crucial role in the development of sustainable education system (UNESCO, 2017). By 2040, the initiative aims to change India's educational system. For both rural and urban areas of India, it offers educational and vocational training from basic to higher education. It was accepted by the Indian Union Cabinet. Every child has the right to access education and they should be given equal opportunities providing quality education. No child at the age group of 6-14 years should be derived to access education on the basis of age, language, ethnicity, poverty, religion, geographic etc. The 86th constitutional amendment in 2000, made education a fundamental right of a child which was inserted in Article-21 (A) of Indian Constitution. In other words, free and compulsory education is to be made reachable to every child in every society across the land without any discrimination (Mishra,2019). The focus of NEP is on learning how to learn. Less content was taught in favor of critical thinking, problem-solving skills, creativity, multidisciplinary, innovative adaptation, and the ability to take in new information in rapidly evolving disciplines. Education ought to be flexible, fun learner centered, inquiry driven, holistically integrated, learner centered, and discussion based. For holistic development, the curriculum needs to cover fundamental humanities, arts, drafts, games, sports, language, literature, culture, values, science, and arithmetic (MHRD, 2006). An innovative and forward-thinking education policy is essential for every nation, as education plays a crucial role in advancing both economic growth and social development. India's commitment to the global education development agenda is evident in the Sustainable Development Goals established in 2015. As stated in SDG 4: "Provide inclusive and fair access to quality education and encourage lifelong learning opportunities for everyone" by

the year 2030. The NEP 2020 aims to close social disparities in access, participation and learning outcomes within school education, and this initiative will be integrated into all education sector development programs. It will lead to a fundamental change in India's education system, transforming it into an enlightened, modern, progressive, and equitable framework.

Keyword: NEP 2020, Paradigm shift Quality education, equitable and inclusive education

Language competency in teaching English in Ziro valley

Tilling Sunya

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Abstract: The various measures taken up for the upliftment of the tribal people are usually divided into three categories: (i) protective, (ii) mobilization, and (iii) developmental. The Protective measures include formulation of laws by the concerned states to safeguard the rights and interests of the tribal community in the form of restoration of tribal land rights, providing special administration in the scheduled tribal areas (Articles 244 and 244a in the 5th and 6th schedule of the Indian Constitution). Mobilization refers to the reservation extended to the tribal communities in the domains of politics, government employment and educational institutions. Developmental measures aim at programmes and activities that are initiated for promoting the welfare and development of the tribal people. In order to attract tribal children towards education and motivate their parents to avail of incentive schemes for their children's education, the Ministry of Tribal Affairs has launched from time to time several programmes and schemes that reflect government's commitment to educationally uplift the tribal communities.

Article 366 (25) of the Constitution of India refers to Scheduled Tribes as those communities, who are scheduled in accordance with Article 342 of the Constitution. The essential characteristics, first laid down by the Looker Committee, for a community to be identified as Scheduled Tribes are (i) indications of primitive traits, (ii) distinctive culture, (iii) shyness of contact with the community at large, (iv) geographical isolation, and (v) backwardness. The tribal communities in India are largely concentrated in the Central and the North-Eastern regions of the country, who are specially treated under 5th Schedule and 6th Schedule of the Indian Constitution, respectively. The Scheduled Tribes population of India stands at 104.3 million,

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constituting 8.6% of the total population, who live in about 15% of the country's areas in various ecological and geo-climatic conditions ranging from plains and forests to hills and inaccessible areas. About 11.3% of ST community lives in rural areas while 2.8% live in urban areas (Annual report of the Ministry of tribal Affairs, GOI, 2014). In 2011, the literacy rate for the ST community was 59% which increased from 8.53% in 1961. During 2001 to 2011, the ST male literacy rate increased from 59.2% to 68.5% and ST female literacy rate increased from 34.8% to 49.2%. Scheduled Tribes (STs), popularly known as 'Adivasis,' are marginalized social groups, officially recognized as the most educationally backward community compared to others. As most of the tribal communities live in remote, inaccessible localities; thus, it is very challenging to ensure an equitable quality education for these communities. Children belonging to different tribal 2 communities need special attention for their overall development through equitable quality education, as their social and cultural reality is very different from others. Despite several efforts made by the government, teachers, leaders, administrators, and other organizations, they face substantial inequalities in getting educational opportunities. Thus, there exists a gap in providing learning opportunities for marginalized or deprived children, like children from different tribal communities. Education is an investment in people for empowering them to cope with the changing economic and technological conditions (Srivastava, 1981).

Keyword: Language, competency, teaching English, Ziro valley

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Effect of Social and Emotional Intelligence of secondary School Studens in their Academic Performance

Ms Nanu Nilling

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Abstract: Emotional intelligence (El) refers to an individual's ability to effectively perceive, understand, manage, and express emotions in both personal and social contexts. First introduced by psychologists Peter Salovey and John Mayer and later popularized by Daniel Goleman, Emotional Intelligence includes key abilities such as self-awareness, self-regulation, motivation, empathy, and social skills. Unlike cognitive intelligence, which is measured primarily through IQ, emotional intelligence emphasizes how effectively individuals manage emotional information and interpersonal relationships.

Adolescence is a critical developmental stage marked by significant physical, emotional, and social changes. During this period, students face increased academic pressure, identity formation challenges, and changing peer dynamics. The development of emotional intelligence is particularly important at this stage, as it enables adolescents to regulate their emotions, cope with stress, form positive relationships, and make responsible decisions. Emotional intelligence contributes not only to emotional well-being, but also to better behavior management and social adaptation in the school environment.

Psychology and emotional intelligence are two related but distinct fields of study. Psychology is the scientific study of behavior and mental processes, including how people think, feel, and behave in various situations. It encompasses a wide range of topics, from basic research on cognitive processes and personality development, to applied research on clinical disorders and interventions. Emotional intelligence (EI), on the other hand, refers to the ability to recognize, understand, and manage one's own emotions, as well as the emotions of others. It involves skills such as empathy, social awareness, and relationship management, and is often seen as a key factor in success in personal and professional settings. While psychology can provide insights into the underlying mechanisms of emotional intelligence, emotional intelligence is not a branch of psychology per se. Rather, it draws on research from a variety of fields, including psychology, neuroscience, and social science, to develop practical strategies for improving emotional

awareness and regulation. Emotional intelligence can play an important role in secondary school education, as it can help students develop skills that are essential for success both in the classroom and in their future lives. It can help students manage their emotions and build resilience in the face of academic and personal challenges. This can lead to better mental health outcomes, improved academic performance, and reduced rates of school dropout. It can improve students' social skills and relationships, which are important for academic success and social development. Students with higher emotional intelligence are better able to communicate effectively, collaborate with others, and resolve conflicts in a constructive manner. It can also contribute to the development of leadership skills, which are increasingly important in the modern workforce. Students who learn to manage their own emotions and understand those of others can become effective leaders who inspire and motivate others. To incorporate emotional intelligence into secondary school education, schools can implement programs and activities that focus on self-awareness, social awareness, and relationship management. This can include activities such as mindfulness training, peer mentoring programs, and collaborative learning projects that encourage teamwork and communication. By promoting emotional intelligence in schools, educators can help students develop essential skills that will benefit them both in and outside of the classroom. Emotional intelligence is the ability to recognize, understand, and manage one's own emotions, as well as the emotions of others. It is a complex construct that encompasses various competencies such as emotional awareness, empathy, and self-regulation. Research has shown that EI is an important predictor of various positive outcomes, including academic performance, mental health, and social relationships. A study on the emotional intelligence of secondary school students would involve assessing the students' abilities in various EI competencies. Lie, emotional awareness can be assessed through self-report measures, such as questionnaires or interviews, which ask students to describe their emotions and how they manage them. Empathy can be assessed through behavioral measures, such as observing students' interactions with others and their ability to understand others' perspectives. Self-regulation can be assessed through cognitive measures, such as tasks that require students to inhibit their impulses or control their emotions.

Keyword: Language, competency, teaching English, Ziro valley

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Investigate diseases that can be transmitted from animals to humans (Zoonoses)

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Abstract: A zoonosis is an infectious disease that has jumped from a non-human animal to humans. Zoonotic pathogens may be bacterial, viral or parasitic, or may involve unconventional agents and can spread to humans through direct contact or through food, water or the environment. They represent a major public health problem around the world due to our close relationship with animals in agriculture, as companions and in the natural environment. Zoonoses can also cause disruptions in the production and trade of animal products for food and other uses. Zoonoses comprise a large percentage of all newly identified infectious diseases as well as many existing ones. Some diseases, such as HIV, begin as a zoonosis but later mutate into human-only strains. Other zoonoses can cause recurring disease outbreaks, such as Ebola virus disease and salmonellosis. Still others, such as the novel coronavirus that causes COVID-19, have the potential to cause global pandemics.

Prevention methods for zoonotic diseases differ for each pathogen; however, several practices are recognized as effective in reducing risk at the community and personal levels. Safe and appropriate guidelines for animal care in the agricultural sector help to reduce the potential for foodborne zoonotic disease outbreaks through foods such as meat, eggs, dairy or even some vegetables. Standards for clean drinking water and waste removal, as well as protections for surface water in the natural environment, are also important and effective. Education campaigns to promote handwashing after contact with animals and other behavioural adjustments can reduce community spread of zoonotic diseases when they occur.

Antimicrobial resistance is a complicating factor in the control and prevention of zoonoses. The use of antibiotics in animals raised for food is widespread and increases the potential for drug-resistant strains of zoonotic pathogens capable of spreading quickly in animal and human populations.

Keywords: Investigate diseases, transmitted, animals to humans, Zoonoses

"To Investigate Solar Cell Performance Using SSN Wafers"

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Abstract: A study was conducted to identify the impact of solid-state nitrogen (SSN) silicon wafers on the performance of solar cells. In general, SSN indicates improvements in bulk quality and lower levels of impurities are incorporated into the solidified wafers. The focus of device manufacture was on crystalline silicon-based architectures (types of configurations) that are commonly used in the manufacture of photovoltaic devices (sunlight-to-electricity generating devices). Evaluation of the electrical performance was done via means of current-voltage (I-V) and overall efficiency measurements. The main parameters evaluated included the open-circuit voltage (Voc), short-circuit current (Isc), and fill factor (FF).

The differences in performance indicated that SSN wafers had more efficient carrier collection and reduced recombination losses than traditional silicon wafers. Additional improvements in crystal quality resulted in SSN wafers being more electrically uniform and that SSN wafers also resulted in more stable devices. The overall performance trends of the SSN wafers were also broke (to have similar performance) as compared to advancements made in crystalline solar cell technology and indicate SSN wafers should be considered as reliable high-performance substrates in the manufacture of high-efficiency photovoltaics.

Keywords: Solar cell performance; SSN wafers; crystalline silicon photovoltaics; carrier recombination; device efficiency.

Participation of Women in Panchayats

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Abstract: Panchayats are primarily the responsibility of State Governments because "Local Government" is a State subject. Panchayats are setup and operate through the respective State PanchayatiRaj Acts. However, in order to make PanchayatiRaj Institutions (PRIs) an effective, efficient and transparent vehicle for local governance, social change and public service delivery meeting the aspirations of local population, major initiatives/schemes/policy of the Ministry of PanchayatiRaj (MoPR), in line with its mandate, are furnished in **Annexure** along with the accomplishments. Article 243D of the Constitution provides for reservation of seats in Panchayats for Scheduled Tribes, Scheduled Castes, Backward Class of citizens and women. 21 States and 2 Union Territories have made provisions, in their respective State PanchayatiRaj Acts/Rules, for 50% reservation for women in Panchyats. For tribal citizens residing in Scheduled Areas as referred to in clause (1) of article 244 of the Constitution, the Provisions of the Panchayats (Extension to the Scheduled Areas) Act, 1996 has been enacted to provide for the extension of the provisions of Part IX of the Constitution. This Act confers special powers on Gram Sabha with respect to preservation of culture and livelihood of tribal people. Ministry has been engaging with the Elected Women Representatives (EWRs) through a series of workshops, conferences, committees and expert groups on the issues of women empowerment and women leadership. Based on the experiences of best practices gained from the interaction during these workshops and interaction as well as recommendations given by various committees and expert groups the Ministry has been issuing advisories to States from time to time. Ministry has also issued advisories to States to facilitate holding of separate Ward Sabha and MahilaSabha meetings prior to Gram Sabha meetings. Advisories have also been issued to States for enhancing the presence and participation of women in Gram Sabha and Panchayat meetings. In addition, this Ministry focuses on developing the capacity of EWRsof Panchayats to enable them to function effectively in Gram Panchayats and properly discharge their leadership roles. The Ministry has also been encouraging increased involvement of women in the functioning of

Panchayatsthrough active participation in the Gram Sabha meetings for preparation of Gram Panchayat Development Plans and various schemes being implemented by the Panchayats.

Ministry of Panchayati Raj is implementing Mission Mode Project on e-Panchayats (MMP-ePanchayat), a Central component of RGSA scheme under which various e-governance projects are funded towards digitalization of Panchayats to bring in efficiency, accountability and transparency in the functioning of the PRIs and for its overall transformation. To strengthen functioning of PRIs across the country, this Ministry has launched eGramSwaraj (https://egramswaraj.gov.in), a user friendly web-based portal, which aims to bring in better transparency in the decentralized planning, progress reporting, financial management, work-based accounting and details of assets created. Further, for ensuring timely audit of Panchayat accounts i.e. receipts and expenditures of Gram Panchayats, this Ministry has rolled out an online application – AuditOnline (https://auditonline.gov.in). This application not only facilitates the auditing of Panchayat accounts but also provides for maintaining of audit records. This application streamlines the process for audit inquiries, draft local audit reports, draft audit paras etc. and thus ensures proper maintenance of accounts by Panchayats to improve transparency and accountability. 2.42 lakh audit reports have been generated for the audit period 2021-22.

Ministry has integrated eGramSwaraj with Public Financial Management System (PFMS). eGramSwaraj-PFMS Interface (eGSPI) enables Gram Panchayats make real time payments to vendors/service providers. As one date,transactions to the tune of Rs. 1.74 lakh crore have been made through eGSPI. e-GramSwaraj has also being integrated with Government-e-Market place (GeM) to enable seamless procurement and accounting experience to the Panchayats.

Keywords: Public Financial Management System (PFMS), Women, Panchayati Raj

Sociological study on the Migration of Population

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Abstract: Migration, whether internal or international, is a complex phenomenon influenced by a multitude of economic, social, political, and environmental factors. This paper delves into the intricate dynamics of human migration, focusing on the rural to urban migration trend in India. Drawing from extensive literature, it explores the push and pull factors driving individuals from rural areas to urban centers, such as employment opportunities, economic prospects, access to education and healthcare, infrastructure development, and the allure of a better standard of living. Theoretical frameworks including neo-classical, human capital, network, relative deprivation, and circulation migration theories are examined to understand the motivations behind migration decisions. Additionally, the paper discusses the significant impacts of rural to urban migration on various aspects of society, including the economy, social networks, environment, health, and politics. While migration can lead to income gains, improved access to education healthcare, and political engagement for migrants, it also poses challenges such as income inequality, social isolation, environmental degradation, and political shifts. Furthermore, the paper emphasizes the need for holistic approaches to address the multifaceted impacts of migration, suggesting sustainable agricultural practices, infrastructural development, employment generation, and tourism promotion as potential strategies. Through comprehensive analysis and synthesis of existing literature, this paper provides insights into the complex nature of rural to urban migration and underscores the importance of understanding its diverse impacts for effective policy formulation and societal development.

KEYWORDS – Migration, Factors, Health, Education, Employment

निज़ामत काल के दौरान बंगाल के ऐतिहासिक विकास

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Abstract: यह पत्र मुग़ल और निज़ामत काल के दौरान बंगाल के ऐतिहासिक विकास की जांच करता है, जिसमें कृषि के औपनिवेशीकरण की प्रक्रिया पर ध्यान केंद्रित किया गया है। मुग़ल काल (1526-1707) बंगाल में कृषि समृद्धि और प्रशासनिक सुधारों का एक महत्वपूर्ण समय था, जहाँ सिंचाई और भूमि राजस्व प्रणालियों में महत्वपूर्ण सुधार किए गए थे, जिससे कृषि उत्पादन में वृद्धि हुई। बंगाल की उर्वरक भूमि सम्राटों की अर्थव्यवस्था में एक प्रमुख भूमिका निभा रही थी, जिसमें चावल और जूट जैसी फसलें शामिल थीं, जो स्थानीय और अंतर्राष्ट्रीय व्यापार के लिए अत्यंत महत्वपूर्ण थीं।

हालाँकि, निज़ामत काल (1717-1757) में स्थानीय स्वायत्तता का पतन हुआ और ब्रिटिश प्रभाव बढ़ा, जिसके परिणामस्वरूप बंगाल की कृषि का औपनिवेशीकरण हुआ। ब्रिटिश ईस्ट इंडिया कंपनी के बढ़ते प्रभाव के साथ, कृषि संसाधनों का भारी शोषण किया गया, ताकि यूरोपीय मांगों को पूरा किया जा सके। ब्रिटिशों ने ऐसे शोषणकारी भूमि राजस्व प्रणालियाँ लागू कीं, जिनके कारण स्थानीय किसानों की शक्ति समाप्त हो गई और कृषि को निर्यात-उन्मुख उत्पादन के लिए बदल दिया गया।

यह पत्र बंगाल के कृषि पर ब्रिटिश शासन के प्रभाव का आलोचनात्मक विश्लेषण करता है, जिसमें आत्मनिर्भर खेती से लेकर निर्यात-उन्मुख प्रणाली की ओर बदलाव की प्रक्रिया को समझाया गया है। कृषि के इस औपनिवेशीकरण के दीर्घकालिक प्रभावों का विश्लेषण किया गया है, जिसमें स्थानीय अर्थव्यवस्थाओं, किसानों की आजीविका, और औपनिवेशिक शोषण पर इसके व्यापक प्रभावों को ध्यान में रखा गया है। यह शोध बंगाल के कृषि परिवर्तन की भूमिका को भी रेखांकित करता है, जो अंततः औपनिवेशिक प्रतिरोध और स्वतंत्रता संग्राम में एक महत्वपूर्ण कारक बन गया।

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भारतीय कला पर सुलेख का प्रभाव

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सारांश: यह शोध सुलेख (कैलिग्राफी) की कलात्मक विशेषताओं और भारतीय कला पर इसके प्रभाव का विश्लेषण करता है। सुलेख एक ऐसी कला है जिसमें लेखन को सौंदर्य और कलात्मकता के रूप में प्रस्तुत किया जाता है। इसमें अक्षरों की लयबद्धता, संतुलन, और शैली की विशेषताएँ प्रमुख होती हैं, जो इसे एक दृश्य कला के रूप में प्रस्तुत करती हैं। भारत में सुलेख का प्रयोग धार्मिक ग्रंथों, संस्कृत साहित्य, और शिलालेखों में किया जाता रहा है, जहाँ शब्दों और चित्रों का संयोजन भारतीय संस्कृति और आस्था को दर्शाता है। मुग़ल काल में भी सुलेख ने अपनी महत्ता प्राप्त की, विशेष रूप से शाही घोषणाओं और धार्मिक लेखन में। भारतीय चित्रकला और स्थापत्य कला में भी सुलेख का महत्वपूर्ण स्थान है, जहाँ यह संस्कृति और धार्मिक विचारों को सुसंस्कृत रूप में व्यक्त करता है। इस शोध में सुलेख की कला के इतिहास, इसकी विशेषताओं, और भारतीय कला पर इसके प्रभाव का विस्तार से विश्लेषण किया गया है, जो भारतीय सांस्कृतिक धरोहर के अमूल्य अंग के रूप में प्रस्तुत होता है।

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Contributions of Guru Gobind Singh to Social transformation

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Abstract: Guru Gobind Singh's depiction of God through the name **Akal** (The Timeless) highlights a significant aspect of Sikh theology, building upon the foundational beliefs established by Guru Nanak in the Japuji. While Guru Nanak described God as uncreated, immortal, and infinite, Guru Gobind Singh emphasized the dynamic and heroic dimension of the divine. **Akal** encapsulates not only God's eternal nature but also His active and unyielding force that transcends time, remaining steadfast in adversity. The phrase "**Sat Sri Akal**" (True is the Immortal Lord), which became the war cry of the Sikhs, symbolizes more than a theological belief—it is a call to action, inspiring resilience, truth, and righteousness. The phrase has echoed through Sikh history, urging Sikhs to stand firm against injustice and to sacrifice for the greater good. This expression embodies the qualities of strength, purpose, and resolve, associated with a heroic and timeless God, and continues to inspire the Sikh community in their pursuit of justice and truth.

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पश्चिम पाकिस्तान से पलायन करने वाले हिंदुओं और सिखों के पुनर्वास नीति

Tantan

University of Purnia

सारांश: इस शोध के चरण में, मैंने विभाजन के बाद के उथल-पुथल भरे दिनों और पश्चिम पाकिस्तान से पलायन करने वाले हिंदुओं और सिखों के पुनर्वास नीति पर अध्ययन किया। यह समय विशेष रूप से संदेह और अनिश्चितता से भरा था, क्योंकि यह स्पष्ट नहीं था कि प्रवासी समुदाय का भविष्य क्या होगा और उनका जीवन किस दिशा में जाएगा। माइग्रेशन, चाहे किसी भी आर्थिक स्तर पर हो, एक नए देश में जाना और एक स्थिर और सुरक्षित जीवनशैली को छोड़ना अधिकांश लोगों के लिए अंतिम उपाय था।

इस शोध का उद्देश्य यह जांचना है कि क्या प्रवासियों के लिए जीवन अंततः बेहतर हुआ या क्या उनकी शंकाएं और भय सही साबित हुए। "पुनर्वास की कहानी" में अधिकांश सरकारी बयान पश्चिमी क्षेत्र में राज्य प्रायोजित पुनर्वास कार्यक्रम का केवल एक प्रशंसा करने वाला वर्णन हैं। हालांकि, मंत्रालय ने सरलता और मानवीय संवेदनशीलता का प्रदर्शन किया, जो सरकारी तंत्र के लिए असामान्य था, लेकिन यह भी देखा गया कि जिन लोगों के लिए ये प्रयास किए गए, उन्होंने साहस, आत्मनिर्भरता और समाज की भलाई के लिए दृढ़ संकल्प दिखाया। इस अध्याय में, हम पश्चिम पाकिस्तान के शरणार्थियों के विभाजन के बाद के पुनर्वास से संबंधित प्राथमिक चिंताओं की पहचान करेंगे और उनका विश्लेषण करेंगे।

मुगल काल के दौरान भारत में मध्यम वर्ग की महिलाओं की स्थिति शिक्षा और सांस्कृतिक जीवन

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मुगल काल के दौरान भारत में मध्यम वर्ग की महिलाओं की स्थिति

मुगल काल (1526-1857) भारतीय इतिहास का एक महत्वपूर्ण दौर था, जिसमें सामाजिक, सांस्कृतिक, और राजनीतिक दृष्टिकोण से कई बदलाव हुए। इस काल में महिलाओं की स्थिति, विशेषकर मध्यम वर्ग की महिलाओं की, एक जटिल और विविधतापूर्ण विषय है। जबकि उच्च वर्ग की महिलाओं का जीवन महलों में बिता और वे प्रायः पर्दे (पलंग) में रहती थीं, वहीं मध्यम वर्ग की महिलाओं की स्थिति अपेक्षाकृत अधिक चुनौतीपूर्ण थी, क्योंकि उन्हें पारंपरिक समाज के नियमों और घरेलू जिम्मेदारियों के बीच संतुलन बनाए रखना पड़ता था।

शिक्षा और सांस्कृतिक जीवन

मुगल काल के दौरान, शिक्षा का स्तर और अवसर आम तौर पर महिलाओं के लिए सीमित थे। उच्च वर्ग की महिलाओं को महलों में खासतौर पर संगीत, नृत्य, कला, और साहित्य का शिक्षा दी जाती थी, लेकिन मध्यम वर्ग की महिलाओं को शिक्षा का अधिक अवसर नहीं था। बावजूद इसके, कुछ महिलाओं ने अपने परिवारों में शिक्षा के महत्व को समझा और अपने बच्चों को पढ़ाया। विशेषकर शाही परिवारों में कुछ महिलाएं साहित्यिक कार्यों में योगदान करती थीं, लेकिन यह एक अपवाद था, न कि सामान्य स्थिति।

सामाजिक और पारिवारिक भूमिकाएं

मुगल समाज में महिलाएं मुख्य रूप से घरेलू कार्यों और परिवार के पालन-पोषण में संलग्न रहती थीं। वे घर के कार्यों, बच्चों की देखभाल, भोजन बनाने, और घर की अन्य जिम्मेदारियों को संभालती थीं। महिलाओं को आम तौर पर पति और परिवार के अन्य पुरुष सदस्य की अनुमति और संरक्षण में रहना पड़ता था। हालांकि, मध्यम वर्ग की महिलाओं के लिए सामाजिक स्थितियां अधिक कठोर थीं क्योंकि उन्हें घरेलू कामों के साथ-साथ सामाजिक कर्तव्यों को भी निभाना पड़ता था।

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"Ilyas Shahi Dynasty' and Sufi saints in Medieval Bengal

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Abstract: This research examines the issue of interreligious intolerance in Bengal, particularly focusing on the historical context of Muslim rule in medieval Bengal (1204-1757 CE) and its impact on the region's societal integration, and compares it to the contemporary religious conflicts in Bangladesh and West Bengal, India. Islam, with its emphasis on societal integration and religious tolerance, has historically fostered a culture of peace and inclusivity, especially through the efforts of Sufi missionaries. However, recent political and societal tensions have led to growing interreligious intolerance in these regions. Instances such as the Sikh-Hindu riots, Hindu-Muslim conflicts, and the recent issues surrounding the Citizenship Amendment Bill in India, along with religious intolerance against minorities in Bangladesh, illustrate the contemporary challenges to interfaith harmony. This research aims to understand the roots of these conflicts and assess how historical practices of tolerance during Muslim rule in Bengal can inform present-day efforts to address interreligious discord and promote societal cohesion in both Bangladesh and West Bengal. The study underscores the importance of revisiting historical precedents for peace and tolerance as a means to tackle ongoing religious and social conflicts.

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बंगाल में ईस्ट इंडिया कंपनी की शुरुआत में मालदा फैक्ट्री की भूमिका)1680–1705)"

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सारांश: यह शोध पत्र 1680 से 1705 तक बंगाल में ईस्ट इंडिया कंपनी की व्यापारिक गतिविधियों और मालदा फैक्ट्री की भूमिका का अध्ययन करता है। मालदा, जो एक महत्वपूर्ण व्यापारिक केंद्र था, ने ईस्ट इंडिया कंपनी के व्यापारिक हितों के लिए एक रणनीतिक बिंदु के रूप में कार्य किया। इस समय के दौरान, मालदा फैक्ट्री ने अंग्रेजों को बंगाल के भीतर और अन्य वैश्विक बाजारों में व्यापारिक संपर्कों को मजबूत करने का अवसर प्रदान किया। इस शोध का उद्देश्य मालदा फैक्ट्री के महत्व को स्पष्ट करना है, और यह समझना है कि कैसे इस फैक्ट्री ने ईस्ट इंडिया कंपनी की बांग्लादेश के व्यापारिक विस्तार में मदद की, और किस प्रकार से यह स्थान 17वीं सदी के अंत और 18वीं सदी के प्रारंभ में अंग्रेजों की साम्राज्यवादी नीति का एक अभिन्न हिस्सा बन गया।

शब्द किवर्ड: ईस्ट इंडिया कंपनी, मालदा फैक्ट्री, बंगाल व्यापार, 17वीं सदी, साम्राज्यवाद, व्यापारिक नेटवर्क

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इंडो-गैंगेटिक मैदानों में भूमि उपयोग और जनसंख्या गतिशीलता: जलवायु, जल और संसाधन

Manmohan

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सारांश: इंडो-गैंगेटिक मैदान, जो दक्षिण एशिया के एक विशाल और उर्वर क्षेत्र में फैला हुआ है, भूमि उपयोग और जनसंख्या गतिशीलता के संदर्भ में महत्वपूर्ण सामाजिक, आर्थिक और पर्यावरणीय कारकों को प्रभावित करता है। यह क्षेत्र जलवायु, जल स्रोतों और प्राकृतिक संसाधनों के संदर्भ में एक अद्वितीय स्थिति में है, जो भूमि उपयोग के पैटर्न और जनसंख्या प्रवृत्तियों को आकार देता है।

यह शोध इंडो-गैंगेटिक मैदानों में भूमि उपयोग परिवर्तन, जलवायु परिवर्तन, जल आपूर्ति और प्राकृतिक संसाधनों के वितरण के बीच के आपसी संबंधों की जांच करता है। इस क्षेत्र में कृषि गतिविधियाँ प्रमुख हैं, लेकिन जलवायु परिवर्तन, जल संकट, और संसाधनों का असमान वितरण भूमि उपयोग और जनसंख्या प्रवास में महत्वपूर्ण बदलावों का कारण बन रहे हैं। शोध का उद्देश्य यह समझना है कि जलवायु परिवर्तन और जल स्रोतों के प्रबंधन के तरीके किस प्रकार जनसंख्या प्रवृत्तियों को प्रभावित कर रहे हैं, विशेष रूप से जल संकट और कृषि उत्पादन की स्थिति के संदर्भ में।

शोध के निष्कर्ष यह संकेत करते हैं कि इंडो-गैंगेटिक मैदानों में जलवायु परिवर्तन, जल स्रोतों की कमी, और संसाधनों का असमान वितरण भूमि उपयोग के निर्णयों और जनसंख्या के प्रवास पैटर्न को प्रभावित कर रहे हैं। यह अध्ययन इस क्षेत्र में विकास नीतियों और जलवायु अनुकूलन रणनीतियों की आवश्यकता की पहचान करता है, ताकि भविष्य में इस क्षेत्र के पर्यावरणीय और सामाजिक संतुलन को बनाए रखा जा सके।

शब्द किवर्ड: इंडो-गैंगेटिक मैदान, भूमि उपयोग, जनसंख्या गतिशीलता, जलवायु परिवर्तन, जल संकट, प्राकृतिक संसाधन, कृषि, जल प्रबंधन

Customer Satisfaction and Behavior

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Abstract: Customer satisfaction is a key element in the success of any business, influencing customer loyalty, retention, and overall profitability. It reflects the degree to which a product or service meets or exceeds customer expectations. Customer behavior, on the other hand, refers to the actions and decision-making processes that customers undertake when choosing, purchasing, and using products or services. Understanding the relationship between customer satisfaction and behavior is critical for businesses aiming to develop strategies that enhance customer experience, improve product offerings, and foster long-term customer loyalty.

This study explores the relationship between customer satisfaction and behavior by analyzing how various factors, such as product quality, customer service, price, and brand reputation, influence customer decisions. It examines how customer satisfaction leads to repeat purchases, word-of-mouth recommendations, and brand loyalty. Furthermore, the study looks at the role of customer feedback in shaping business strategies and improving customer relationships. It emphasizes the importance of meeting customer expectations, addressing complaints effectively, and creating a positive emotional connection with customers.

The research also considers the impact of cultural, social, and psychological factors on customer behavior, highlighting how these elements can vary across different consumer segments. The findings of this study can assist businesses in making informed decisions regarding marketing strategies, product development, and customer service improvement, ultimately contributing to a better understanding of consumer behavior and how to maximize customer satisfaction.

Keywords: Customer Satisfaction, Customer Behavior, Loyalty, Product Quality, Customer Service, Brand Reputation, Consumer Segments

कांशीराम का दृष्टिकोण और उनका योगदान

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सारांश: कांशीराम, जो भारतीय समाज के सबसे प्रभावशाली नेताओं में से एक माने जाते हैं, ने भारतीय समाज में शोषित वर्गों, विशेषकर दलितों और पिछड़े वर्गों के अधिकारों की रक्षा के लिए एक मजबूत आवाज उठाई। उनका दृष्टिकोण और कार्य भारतीय समाज की जातिवाद व्यवस्था और सामाजिक असमानता के खिलाफ था। कांशीराम ने समाज के सबसे कमजोर वर्गों के उत्थान और सशक्तिकरण के लिए अपनी पूरी ज़िन्दगी समर्पित की। उन्होंने भारतीय राजनीति में दलितों की सशक्त उपस्थिति सुनिश्चित करने के लिए कई महत्वपूर्ण कदम उठाए।

दृष्टिकोण और कार्य:

कांशीराम का मुख्य दृष्टिकोण यह था कि समाज के निचले वर्गों को सिर्फ राजनीतिक अधिकारों की आवश्यकता नहीं थी, बल्कि उन्हें सामाजिक, सांस्कृतिक और आर्थिक सशक्तिकरण की भी आवश्यकता थी। उन्होंने यह महसूस किया कि भारतीय समाज में जातिवाद और भेदभाव को खत्म करने के लिए केवल सत्ता में हिस्सेदारी नहीं, बल्कि अपने अधिकारों और सम्मान की लड़ाई भी जरूरी है।

सामाजिक न्याय और समानता के लिए संघर्ष:

कांशीराम ने 'बहुजन समाज पार्टी' (BSP) की स्थापना की, जो मुख्य रूप से दलितों, पिछड़े वर्गों और अल्पसंख्यकों की राजनीति के लिए समर्पित थी। उनका मानना था कि समाज के सभी वर्गों को समान अधिकार मिलना चाहिए और उन्हें अपने अधिकारों की प्राप्ति के लिए संघर्ष करना चाहिए। उनका प्रमुख लक्ष्य था कि समाज के शोषित वर्गों को राजनीतिक सशक्तिकरण प्राप्त हो, ताकि वे अपनी आवाज उठा सकें और उनके अधिकारों की रक्षा की जा सके।

कांशीराम का योगदान:

1. **दलितों और पिछड़े वर्गों के अधिकारों के लिए संघर्ष:** कांशीराम ने दलितों के अधिकारों की रक्षा के लिए कई आंदोलनों का नेतृत्व किया। उनका मुख्य उद्देश्य था कि समाज के शोषित वर्गों को समान अवसर मिलें।
2. **बहुजन समाज पार्टी की स्थापना:** कांशीराम ने 1984 में बहुजन समाज पार्टी (BSP) की स्थापना की, जो दलितों, पिछड़ों और अल्पसंख्यकों के अधिकारों के लिए एक मंच प्रदान करती थी। उनकी पार्टी ने भारतीय राजनीति में दलितों को एक मजबूत पहचान दी।
3. **शिक्षा और जागरूकता का प्रचार:** कांशीराम ने शिक्षा के महत्व को समझा और शोषित वर्गों के बीच शिक्षा और जागरूकता फैलाने के लिए कई अभियान चलाए। उनका मानना था कि शिक्षा ही समाज में समानता लाने का सबसे प्रभावी तरीका है।
4. **जातिवाद के खिलाफ संघर्ष:** कांशीराम ने भारतीय समाज में जातिवाद को समाप्त करने के लिए संघर्ष किया और यह सुनिश्चित किया कि दलितों और पिछड़े वर्गों को समान अधिकार मिलें।

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Mathematics in Teaching

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Abstract: Mathematics plays a pivotal role in teaching across various disciplines, serving as both a foundational tool and a language for understanding complex concepts. In educational contexts, mathematics is not only essential for subjects like science, economics, and engineering, but also helps develop critical thinking, problem-solving, and analytical skills among students. The integration of mathematical principles in teaching methods enhances cognitive abilities, promoting structured thinking and logical reasoning. Additionally, incorporating mathematics into the curriculum fosters creativity, allowing students to approach real-world problems with precision and innovation. This abstract highlights the significance of mathematics in pedagogy, exploring its contribution to educational frameworks and emphasizing its impact on students' intellectual growth. Furthermore, it examines strategies for effectively utilizing mathematical concepts to support the learning process in various academic fields. Through this approach, educators can enrich student engagement and foster a deeper understanding of both theoretical and practical applications of mathematics.

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THE ELLIPTIC CURVE CRYPTOGRAPHY OVER PRIME FIELDS (F_P) USING VEDIC MATHEMATICS AND PROJECTIVE COORDINATE SYSTEM

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ABSTRACT: Elliptic Curve Cryptography (ECC) over prime fields F_p is widely adopted in modern cryptographic systems due to its high security with relatively smaller key sizes. However, the computational complexity of point addition and point doubling operations remains a critical performance bottleneck, particularly in resource-constrained environments. In this paper, techniques derived from Ancient Indian Vedic Mathematics (AIVM) are employed to accelerate the arithmetic operations involved in ECC implemented using the projective coordinate system. The proposed approach integrates Vedic mathematical algorithms into elliptic curve point addition and point doubling processes, enabling efficient parallel computation and reduced computational overhead. An improved parallel elliptic curve algorithm is designed and implemented using projective coordinates to eliminate costly inversion operations. Performance analysis demonstrates that the proposed AIVM-based design achieves superior speed and computational efficiency compared to conventional ECC implementations and existing projective coordinate-based methods. The experimental results indicate that the proposed scheme offers enhanced performance with reduced computational cost, making it a promising and attractive direction for high-speed and low-resource cryptographic applications.

Key Words: Elliptic Curve, Cryptography, Projective Coordinate System, Urdhva Tiryagbhyam multiplication, Dvandva Yoga technique, Point Addition, Point Doubling

Mathematics Subject Classification: 94A60, 14G50.

AI-Assisted Statistical Evaluation of Grain Distribution in Paddy Panicles Using a Paired t-Test

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Abstract: The integration of artificial intelligence (AI) with classical statistical techniques can enhance data quality and reliability in agricultural research. This study evaluates differences in grain distribution between the top and bottom portions of paddy panicles using an AI- assisted analytical framework combined with a paired t-test. Grain count data were collected from twenty paddy panicles, with paired observations recorded from the top and bottom portions of each panicle. AI-based preprocessing methods were applied for data validation, consistency checking, and outlier screening prior to statistical analysis.

The paired t-test revealed a statistically significant difference between top and bottom grain counts ($t = 9.80$, $df = 19$, $p < 0.05$), indicating a higher concentration of grains in the top portion of the panicle. The findings confirm the presence of intra-panicle variability in grain distribution and demonstrate the usefulness of integrating AI-assisted data preprocessing with conventional inferential statistics. This hybrid approach provides a reliable and reproducible framework for precision agriculture, yield assessment, and data- driven crop management.

Keywords: Artificial intelligence, paired t-test, paddy grain distribution, precision Agriculture, data analytics.

A STUDY OF ANCIENT HISTORY: EVOLUTION OF EARLY HUMAN SOCIETIES

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ABSTRACT

Ancient history forms the foundation of human civilization by examining the political, social, economic, cultural, and religious developments of early societies. This study explores the evolution of ancient civilizations with special reference to their administrative systems, social structures, belief systems, and contributions to art, science, and technology. By analyzing archaeological evidence, literary sources, inscriptions, and material culture, the paper highlights how early human communities transitioned from nomadic life to organized urban societies. The research also emphasizes the role of geography, trade, and technological innovations in shaping ancient cultures. Understanding ancient history not only provides insight into the origins of modern institutions and ideas but also helps in appreciating the continuity and change in human society over time. The study concludes that ancient civilizations laid the intellectual and cultural groundwork for later historical developments and continue to influence contemporary world civilizations.

Keywords: Ancient History, Early Civilizations, Archaeology, Social Structure, Political Systems, Cultural Heritage, Urbanization, Trade and Technology

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AN ANALYTICAL STUDY OF POLITICAL INSTITUTIONS AND GOVERNANCE IN INDIA

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ABSTRACT

Political science as a discipline examines the structures, processes, and dynamics of power, governance, and political institutions within society. This study explores the evolving nature of democratic governance, public policy, and political participation in the contemporary Indian context, with special reference to regional perspectives from Uttarakhand. The research highlights the role of constitutional values, political institutions, and citizen engagement in strengthening democratic practices. It also analyzes challenges such as political awareness, governance efficiency, decentralization, and socio-political development in emerging states. By adopting an interdisciplinary and analytical approach, the study contributes to a deeper understanding of political behavior and governance patterns at both regional and national levels. The findings emphasize the importance of inclusive governance, accountability, and participatory democracy for sustainable political development.

Keywords:
Political Science, Democracy, Governance, Public Policy, Political Institutions, Uttarakhand

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A COMPUTATIONALLY EFFICIENT APPROACH TO THE ROLE OF NUMBER THEORY IN CRYPTOGRAPHY

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ABSTRACT

Number theory plays a crucial role in modern cryptography by providing the mathematical foundation for secure communication systems. Concepts such as prime numbers, modular arithmetic, and number-theoretic functions are central to the design of encryption and decryption algorithms. Many widely used cryptographic methods, including RSA, Diffie-Hellman key exchange, and elliptic curve cryptography, rely on the computational difficulty of solving certain number-theoretic problems. This paper examines how number theory underpins cryptographic techniques, explores its applications in securing digital information, and discusses emerging challenges such as quantum computing. Understanding the role of number theory highlights its importance in ensuring data confidentiality, integrity, and authentication in the digital age.

Keywords: Number Theory, Cryptographic Algorithms, Computational Efficiency, Public Key Cryptography, Mathematical Security

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A COMPUTATIONALLY EFFICIENT APPROACH TO MODERN CRYPTOGRAPHIC SYSTEMS USING VEDIC MATHEMATICS SUTRAS

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ABSTRACT

Modern cryptographic systems play a vital role in ensuring data security in contemporary digital communication; however, their effectiveness is often constrained by high computational complexity and processing overhead. To address these challenges, this paper presents a computationally efficient approach to modern cryptographic systems using Vedic Mathematics techniques. The proposed methodology integrates selected Vedic sutras, particularly those related to fast arithmetic operations, into core cryptographic computations such as modular multiplication, point addition, and point doubling. By optimizing these fundamental operations, the overall computational efficiency of cryptographic algorithms is significantly enhanced without compromising security strength. Performance evaluation is carried out in terms of computation time, resource utilization, and algorithmic complexity, and the results demonstrate noticeable improvements compared to conventional mathematical approaches. The findings suggest that Vedic Mathematics-based techniques offer a promising alternative for designing high-performance and energy-efficient cryptographic systems, especially suitable for resource-constrained environments and real-time secure applications.

Keywords: Vedic Mathematics, Cryptographic Systems, Computational Efficiency, Secure Communication, Arithmetic Optimization, Cryptographic Algorithms

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A STUDY OF CRYPTOGRAPHY AND ITS APPLICATION IN INFORMATION SECURITY

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ABSTRACT

In the digital age, the rapid growth of information technology and network-based communication has intensified concerns regarding data security and privacy. Cryptography has emerged as a fundamental technique for protecting sensitive information from unauthorized access and cyber threats. This study presents a comprehensive overview of cryptography and its applications in information security. It examines the theoretical foundations of cryptography, including classical and modern encryption concepts, and explores widely used cryptographic techniques such as symmetric and asymmetric encryption, hash functions, digital signatures, and elliptic curve cryptography. The study also discusses practical applications of cryptography in securing communication networks, cloud computing, e-commerce transactions, authentication systems, and emerging technologies such as blockchain and quantum-secure communication. Furthermore, recent advancements in cryptographic research, including efficiency optimization and post-quantum cryptography, are highlighted. The findings of this study emphasize that cryptography plays a crucial role in ensuring confidentiality, integrity, authentication, and non-repudiation of information. The paper concludes that continuous innovation in cryptographic algorithms and security mechanisms is essential to address evolving cyber threats and to maintain trust in modern information systems.

Keywords: Number Theory, Cryptographic Algorithms, Computational Efficiency, Public Key Cryptography, Mathematical Security

VEDIC MATHEMATICS: ANCIENT TECHNIQUES FOR FAST AND ACCURATE CALCULATIONS

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ABSTRACT

Vedic Mathematics is an ancient system of computation rooted in Indian mathematical traditions, derived primarily from the sixteen sutras attributed to the Atharva Veda. This system offers a collection of mental calculation techniques that enable fast, efficient, and accurate solutions to complex arithmetic problems. The present study explores the fundamental principles of Vedic Mathematics and examines its effectiveness in simplifying calculations related to arithmetic operations, algebra, and number theory. By comparing conventional mathematical methods with Vedic techniques, the paper highlights significant reductions in computational time and error rates. The study also discusses the pedagogical value of Vedic Mathematics in enhancing mental agility, concentration, and problem-solving skills among learners. Through illustrative examples and analytical discussion, the paper demonstrates how ancient mathematical wisdom remains relevant in modern educational and computational contexts. The findings suggest that integrating Vedic Mathematics into contemporary curricula can improve computational efficiency and foster a deeper conceptual understanding of mathematics.

Keywords: Vedic Mathematics, Ancient Indian Mathematics, Fast Calculations, Mental Arithmetic

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Analytical methods for activated carbon characterisation: a comprehensive review

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Abstract: Activated carbon is a versatile porous material extensively employed in environmental remediation, owing to its high surface area and porosity. This review provides a comprehensive study of the analytical methods used for the characterization of AC. Textural properties like surface area are mainly analysed by Brunauer-Emmett-Teller (BET) technique, whereas advanced models viz. Barrett-Joyner-Halenda (BJH), Dubinin-Radushkevich (DR), and density functional theory (DFT) offer insights into mesoporous and microporous structures. Fourier transform infrared spectroscopy (FTIR) is extensively applied to recognize the surface functional groups like -OH, -COOH, -CO etc. groups. Scanning electron microscopy (SEM) utilised in the qualitative analysis of the sample surface, while transmission electron microscopy (TEM) permits for high-resolution imagining of pore structures and carbon frameworks. X-ray diffraction (XRD) is used to analyse the degree of crystallinity and characteristically revealing the amorphous nature of AC. Thermogravimetric analysis (TGA) is extensively applied to estimate the moisture content, thermal stability, on the other hand, Elemental analysis (CHNS/O) provide information regarding enabling correlations between elemental content, and bulk compositional data. This review focusses on the strengths and limitations of frequently used characterization techniques and application of AC in wide-ranging industrial fields.

Key words: Activated carbon, Techniques, Characterisation, Materials

EFFECT OF MATHEMATICAL MODELING UNDER THE INFLUENCE OF BOUNDARY LAYER MHD FLOW

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ABSTRACT-Mathematical modelling plays a vital role in analyzing and predicting the behavior of boundary layer flows influenced by magnetohydrodynamic (MHD) effects. MHD boundary layer flow occurs when an electrically conducting fluid moves in the presence of an applied magnetic field, which significantly alters the flow and heat transfer characteristics. Understanding these effects through mathematical modelling is essential for the design and optimization of many engineering and industrial systems, including cooling technologies, metallurgical processes, and electromagnetic flow control devices. This study presents a mathematical model to investigate the influence of MHD on boundary layer flow behavior. The governing equations are developed based on the fundamental principles of conservation of mass, momentum, and energy for a steady, laminar, incompressible, and electrically conducting fluid. The effect of a uniform transverse magnetic field is incorporated into the momentum equation through the Lorentz force term, which acts as a resistive force and modifies the velocity distribution within the boundary layer. Using appropriate similarity transformations, the coupled nonlinear partial differential equations are reduced to a system of ordinary differential equations, which are solved numerically to obtain velocity and temperature profiles. The influence of key dimensionless parameters, such as the magnetic parameter and Prandtl number, on the flow and thermal characteristics is examined. The results show that an increase in magnetic field strength leads to a reduction in fluid velocity and an increase in momentum boundary layer thickness due to enhanced electromagnetic resistance. Additionally, the magnetic field affects the thermal boundary layer by altering heat transfer rates. The mathematical modelling approach provides valuable insight into the complex interaction between magnetic forces and boundary layer flow, contributing to a better understanding of MHD flow behavior and supporting the development of efficient thermal and flow control systems.

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KEY WORDS-Magnetohydrodynamics (MHD); Mathematical modelling; Nanofluid; Heat transfer; Stretching surface;Boundary layer flow; Magnetic field effects; Numerical analysis;Similarity transformation

A CASE STUDY ON SUSTAINABLE FINANCE AND ETHICAL INVESTING (ESG): ISSUE AND PROSPECT

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Abstract- The primary objective of this study is to test a theoretical framework relating an overview of the Sustainable finance weaves environmental, social, and governance considerations into financial strategies, striving for a harmony between economic advancement, environmental preservation, and social fairness. Despite the many challenges in mainstreaming sustainable finance principles in practice, it holds promising potential for crafting a sustainable future. Sustainable Finance is investment planning that integrates environmental, social, and governance factors. Now, businesses were profit-driven and the focus of their attention was their shareholders. But now the priorities have changed. Factors such as environmental, social, and governance have become key components for planning capital allocation. Some of the key elements include climate change, de-forestation, air quality, waste management. The social aspects is include components like customer satisfaction, human rights, employee engagement, fair trade practices and Governance factors determine the standards for running an organization and economy factors are board diversity, stakeholder accountability, measures against bribery and corruption, etc

Sustainable finance and Environmental, Social, and Governance, investing integrate ethical considerations into financial decisions to drive long-term value, with assets surpassing. This paradigm shift, accelerated by climate change and social awareness, uses tools like green bonds, impact investing, and negative screening to align portfolios with sustainable development goals. Sustainable finance represents a transformative shift in how financial services contribute to a

greener, more equitable, and sustainable future. Unlike traditional finance, which often overlooks environmental and social impacts, sustainable finance integrates these considerations into financial decision-making. This approach emphasizes the need to support economic growth while reducing pressures on the environment, addressing social inequities, and ensuring long-term sustainability. Sustainable finance is not merely an ethical choice; it's a pragmatic response to the global challenges posed by climate change, resource depletion, and social disparities. Sustainable finance is underpinned by several core concepts, each playing a crucial role in guiding financial flows towards more sustainable outcomes. These concepts include Environmental, Social and Governance integration, impact investing, green financing, and social responsibility.

Keywords- Sustainable Finance, Concepts of ESG, impact investing, social responsibility, issue and prospects,

Sustainable Finance and Ethical Investing (ESG)

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Abstract: Recent years have seen a significant expansion of ESG investing around the globe as organizations and individuals increasingly recognize the interdependencies between social, environmental, and economic issues.[6] The COVID-19 pandemic encouraged this trend notably.[7] Market disruption and uncertainty caused by the pandemic in 2020 led many investors to turn to ESG funds for increased resiliency. In fact, the first three months of 2020 saw $45.6 billion USD flow into these funds globally.[8] $30.7 trillion currently sits in sustainable investment funds worldwide, and it is predicted this could rise to around $50 trillion in the next two decades.[9] More investors are looking to fund organizations and products that support and promote sustainability, and comply with emerging regulations such as climate change regulations. This demand has been met with increased action on ESG issues in the business world, as well as progressively higher returns on investment for ESG funds due to their resilience against conventional market disruptions.[10] Portfolios incorporating ESG and sustainability also frequently perform better in the long-term than those that don't.[11] For example, US financial services firm Morningstar found that over a period of 10 years, 80% of blend equity funds investing sustainably outperform traditional funds.[12] They also found that 77% of ESG funds that existed 10 years ago have survived, compared with 46% of traditional funds.

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To compute the Grüneisen parameter through thermodynamic relations and through Debye-temperature–volume coupling for nanoscale systems

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Abstract: By determining the Grüneisen parameter, vibrational properties (e.g., elastic) can be directly related to thermal and mechanical properties for solids. Because the densities and relative vibrational properties of surface and nanostructured materials are particularly susceptible to size-dependent phenomena, accurate determination of the Grüneisen parameter is essential. This investigation by Sotiriou et al. utilized two complementary approaches that relied on thermodynamic principles and the relationship between Debye temperature and volume to evaluate the Grüneisen parameter. Within the first approach (use of thermodynamic principles), the evaluative process included the properties of thermal expansion, specific heat, and compressibility, while in the second (the use of Debye temperature), the evaluation indicated a high degree of correlation (or coupling) between the vibrational characteristics and the associated volume changes. The study examined how reduced dimension affects bulk and lattice dynamics through the effects of phonon confinement and anharmonicity. A relative comparison between both methodologies used to establish the Grüneisen parameter yields an increased understanding of the mathematical relationship between both methods and their suitability when applied to nanoscale materials and demonstrates that through the use of volume-dependent Debye temperature, an accurate representation of the substrate-induced deviations from bulk behaviour can be made. Ultimately, this research will enhance the clarity of how thermophysical properties of nanomaterials behave and guide towards developing predictive thermal response models of nanomaterials.

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To evaluate energy shifts at the core level related to changes in bond order and coordination

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Abstract: Core-level energy shifts can illustrate how disturbances in the bonding/structural coordination of atomic architecture (i.e. bonds) impact core-level energy. The goal of this work is to identify how alterations in bond strength, coordination number, and/or symmetry contribute to shifts in core-level energy. Energy shifts associated with core-level binding energies are primarily attributed to charge redistribution, effective nuclear screening variations, and/or alterations in atomic electronic structures. The results of this work will provide a framework for the theoretical interpretation of core-level binding energies observed in both crystalline and nano-particulates (not to mention providing insight into coordination effects). Particular emphasis will be placed on the influence of size on coordination and how size-induced coordination changes impact core-level binding energy. Based on this relationship between bond order, coordination and associated shifts in core-level binding energy, this work will aid in elucidating atomic structure-properties relationships. Moreover, this work will also contribute knowledge of core-level spectroscopy as a highly sensitive probe of local bonding in advanced functional materials.

To evaluate existing countermeasures and improvements proposed to enhance the security and reliability of QKD implementations.

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Abstract: Quantum Key Distribution is commonly accepted as an encryption method with a high level of security using quantum mechanical science. Yet there are numerous threats to practical QKDs due to device imperfections, environmental perturbations, and errors when implementing the system. As such, the purpose of this paper is to address and examine any countermeasures already invented to defend QKD security and to address reliability problems encountered in the practical use of QKD systems. Special attention will be paid to a discussion on existing attack methods to compromise QKD security and a review of their effectiveness through an analysis of current mitigation methods. There will also be a thorough examination of any new methods suggested for increasing the reliability, robustness, and stability of existing and future QKD systems. An important conclusion of this study is there is a need to combine protocol-level and hardware-level security for the reliable operation of QKDs. By providing a thorough examination of the available countermeasures, along with reviewing the recommended improvements, this study provides a greater understanding of the current state of QKD security and outlines potential directions for improving the reliability of future quantum communication networks.

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To propose policy and design recommendations for low impact PV deployment

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Abstract: The rapid growth of solar photovoltaic (PV) systems has created significant challenges regarding land use, material use and environmental compatibility. This paper focuses on the development of recommendations for policies and designs that facilitate low-impact deployment of PV systems, while maintaining energy generation efficiency. The goal is to advocate for the development of PV systems that minimize disturbance to the environment, reduce resource intensity, and reduce conflict between society and the environment through their design and use. Elements of design that are important include the site of deployment, optimal use of materials, sustainability over time, and compatibility with the existing land uses. Recommended policies include modifications to regulations, incentives and guidelines employed by government in order to facilitate appropriate integration of PV systems throughout urban, rural and semi-natural areas. This approach has been developed to demonstrate the need for aligning innovative technologies with environmental stewardship in order to enable an energy transition that is economically viable and environmentally sustainable. By combining design-focused strategies with policy-level proposals, this work will assist in developing PV systems that support renewable energy objectives as well as preserving long-term environmental stewardship and community support.

Role of Arunachal Pradesh Women Self Help Groups (SHGs) in Promoting Gender-Equality: A Case Study in Empowerment of Women at Grassroot Level

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ABSTRACT: Self Help Groups (SHGs) are an important initiative in India which aims to empower women by consolidating poverty alleviation programs into one. Self Help Groups (SHGs) have been playing an important role in promoting financial inclusion in India.The study reveals that the focus of SHGs is to enhance the upliftment of rural women through the organization and development of their decision-making abilities, expanding their access to and control over economic advantages and fostering leadership qualities. To understand the socio-economic and political situation of Women in India, particularly in Kamle District of Arunachal Pradesh, the researcher has used variables such as sex ratio, gender specific life expectancy rate, educational attainment, and employment status as parameters.

This paper attempts to highlight the different challenges faced by the rural Women in Kamle District of Arunachal Pradesh. The study also emphasizes on the vital role played by the SHGs in empowering the rural women by involving skill development, decision-making, personality growth, mentorship, and better health-care as a parameter.

Keyword: Empowerment, Gender-Equality, Financial Inclusion, Parameter, Variables, velopment.

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