



Kathan
ज्ञानम् यजामहे।

KATHAN

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26 JANUARY



HAPPY REPUBLIC DAY



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VISION

To nurture ethically skilled students for better contribution to the industry, business and the upliftment of society.

To develop knowledgeable and professionally competent engineers to meet global challenges .

MISSION

To provide an environment of academic excellence in Engineering and Technology through complete dedication to all round growth of students and develop sustainable solutions.

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Editorial message

It is an occasion of immense pleasure for the UPL University of Sustainable Technology to publish the E-magazine “KATHAN.” KATHAN is the manifestation of the desire of our students to share their innovative ideas on a common platform.

The magazine presents a glimpse of the growth of the institution on many fronts. The University has been simply unstoppable in its progress as it has been actively involved in various activities that have brought to light the hidden talents of the students and staff. They stand as a witness to the monumental efforts taken by the management to make the college a center of excellence in education and research

The Editorial Board of the department of KATHAN wants to thank all the faculty members and students who have made this issue a success by providing articles. The Editorial Board also wants to thank the Management for inspiring us to go forward in publishing KATHAN. Reading this issue would definitely be an inspiration and motivation for all students and staff to contribute even more to the forthcoming issues.

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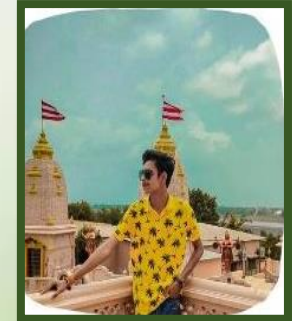
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Celebration of 76th Republic Day

"स्वर्णिम भारत: विरासत और विकास"

The Flag Hosting and Cultural Programme event began with a Guard of Honor to the Chief Guest by NCC Cadets, followed by the escorting of the Chief Guest and members to the venue by Pilot and Cadets. The flag was then hoisted by the Chief Guest, Rtn. Suresh Nahar, marking an important moment in the ceremony. This was followed by the National anthem. The Flag Song, "Janda Uncha Rahe Hamara," and the NCC Song, "Ham Sab Bhartiya Hain," were enthusiastically performed by the NCC Cadets.



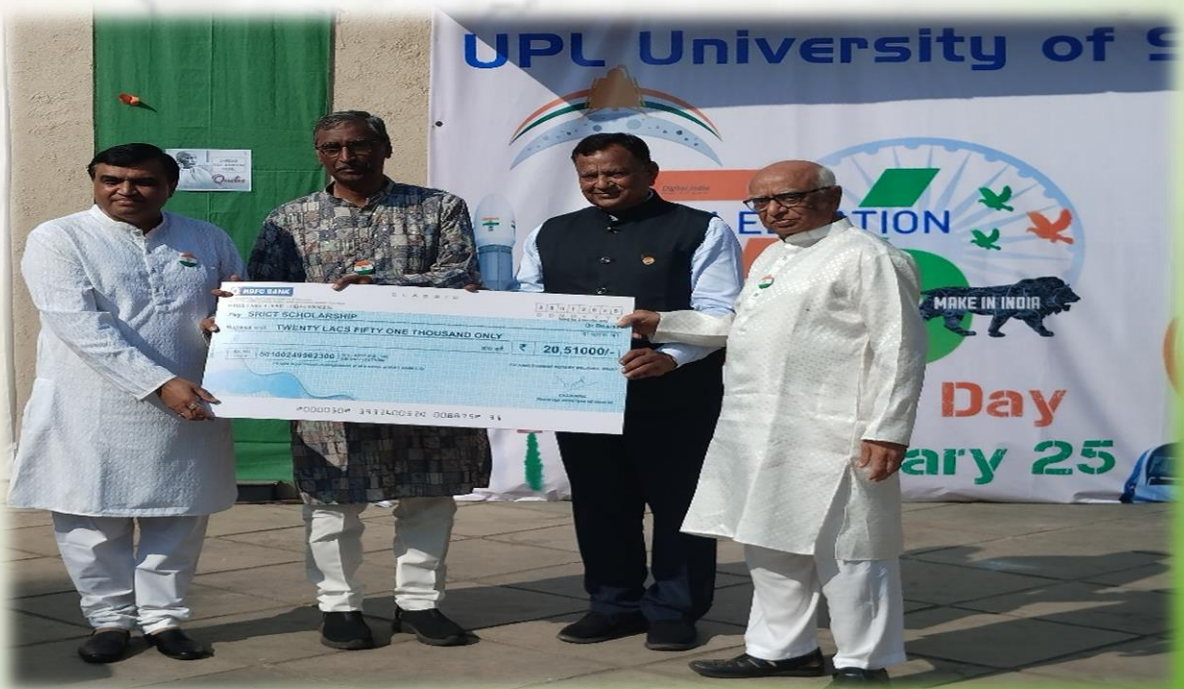
The cultural programme started with a warm welcome by the MOC and the Welcome Address by the Provost Dr. Shrikant J Wagh. Ms. Unnati Gohil captivated the audience with a solo dance performance to the song "Desh Rangila Rangila." The programme continued with the felicitation of NSS volunteers announced by Mr. Satish Verma and NPTEL by coordinator Mrs. Richa Dubey. IICHE-Student Chapter achievement was announced by HoD CE, Dr. Kunal Suthar. Lt. Shivang Ahir was also felicitated for his ANO rank, followed by rank promotions for the Cadets. The latest PhD degree holder Mr. Praful Chudasama was also felicitated by the Chief Guest.

Celebration of 76th Republic Day

Dr. Prashant Arya performed the song "E Mere Pyare Vatan Tujh Pe Dil Kurban," which deeply touched the hearts of audience. Krushna Raj then presented "The Art of the Sword - A Solo Masterpiece." Mr. Angiras Shukla, the Honorable Secretary of Ankleshwar Rotary Education Society (ARES), addressed the audience. President Mr. Ashok Panjwani, sent his message and expressed his heartfelt gratitude and support for the occasion, emphasizing the importance of unity, progress, and the contributions of all members toward the country's growth. This was followed by the address of the Chief Guest, Rtn. Suresh Nahar.

The event concluded with the announcement of scholarships worth Rs. 20,51,000, by the Ankleshwar Rotary Welfare Trust followed by a Vote of Thanks by the Registrar. Refreshments were served at the Canteen to wrap up the event.

The event was coordinated by Mr. Yogesh Shinde, Librarian, and Mr. Parasmal Jain, Sports and Cultural Coordinator, with support of the Admin Staff. It successfully combined patriotic moments, cultural performances, and recognition of outstanding contributions, creating a memorable experience for all attendees.



Technical Article

Machine learning and Artificial intelligence in Paints and Coatings Industry

Paints and coatings companies use AI to can gain competitive advantages, save costs, reduce production time, and improve product quality. It helps with color matching, formulation optimization, quality control, and predictive maintenance. Here, we'll discuss the role of artificial intelligence in the paints and coatings industry.

The paints and coatings industry is a dynamic market and includes various sectors like buildings and construction, automobile finishes, furniture (wood and non-wood), medical products, and other equipment. From antimicrobial coatings to self-cleaning paints and solar panel paintings, the products are used in a plethora of industries.

The Covid-19 pandemic affected the industrial coatings sector in 2020, resulting in a 4.2% decline in the global market size. Fortunately, the industry is regaining its position and returning to pre-pandemic levels. According to Statista, the global paints and coatings industry is expected to touch \$235.06 billion by 2029.

Digitalization and sustainability are two key factors driving the paints and coatings industry in today's world. Manufacturers and retailers are adopting artificial intelligence and machine learning tools to streamline production, quality control, distribution, and sales.

AI can forecast coating performance, increase production efficiency, optimize formulas, improve customer satisfaction, and save time, effort, and cost for the paints and coatings industry. In this blog, we'll read about the role of AI in the paints and coatings industry and the need for partnering with an artificial intelligence consulting company to increase ROI and profits.

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Importance of AI in the paints and coatings industry:

Artificial intelligence has varied roles in the paints and coatings industry. From developing corrosion and wear-resistant paints to increasing their adhesiveness and enhancing the self-lubricating nature of paints, AI can help in conducting the necessary research into material properties and creating new chemical compositions. AI and ML algorithms are being used for data modeling about the properties of different types of paints (based on their chemical composition). Factors like the toxicity of the paint and coating, price fluctuations based on market demand, environmental impact, alternative materials, etc., can also be determined using AI and ML technologies. In fact, computer vision and AI are used to analyze images in bulk to develop smart coatings. By understanding the functioning of the microstructures in the materials, a manufacturer can not only create more durable and better-quality paints but can also optimize production to reduce input costs.

How can machine learning and artificial intelligence help paints and coatings companies?

The role of AI and ML in the paints and coatings industry is not limited to research and development. It can also be used to match colors and create new shades, help customers choose the right colors based on their requirements, develop the right marketing strategy for the target audiences, streamline the supply chain, and enhance customer experience.

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Color Matching

KCC Corporation, a South Korean paint company, developed an AI-based color matching and design system called K-Smart that can complete color mixing from any combination design in just five minutes. The company used fifty years' worth of data to develop this AI model.

Similarly, there are other AI apps available, such as Sherwin-Williams ColorSnap Match, X-Rite Color-Eye, Datacolor MATCH TEXTILE, Nix Pro 2, etc. that help choose the best colors and combinations to paint the walls (interiors and exteriors).

Using artificial intelligence for matching and mixing colors delivers the following advantages:

1. Increased Efficiency

AI-based color-matching tools can match colors within minutes, which is significantly faster than traditional color-matching methods that can take hours or even days. Traditionally, paint companies rely on an expert technician or a spectrophotometer (or both). However, investing in an AI model results in greater efficiency.

2. Improved Accuracy

These tools also eliminate the potential for human error and subjectivity, resulting in more accurate and consistent color matches. This leads to fewer color mismatches and less rework. Color mismatches can be due to changes in the paint formula, weather conditions, paint quality and age, and the texture and type of surface on which it will be applied. The changes in the pigmentation levels also lead to color mismatch.

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3. Enhanced Sustainability

By enabling manufacturers to use only the optimum quantity of paint, these tools reduce waste and improve sustainability.

4. Better Customer Experience

AI-based color-matching tools enhance the overall customer experience by satisfying their requirements. This leads to greater customer satisfaction and loyalty.

5. Increased Innovation

AI companies that provide these color-matching tools help manufacturers develop new and innovative color options that were previously difficult to achieve with traditional methods. As a result, painting companies are able to stand out in the crowded market.

Formulation Optimization

The significance of formulation optimization in the paints and coatings industry lies in its ability to enhance the quality and effectiveness, of the final product while reducing its cost of production.

While using the traditional methods, the companies had to go through a lot of trial and error. Due to this, formulations were often suboptimal, time-consuming, and expensive. With AI, optimization has become much more efficient and accurate in recent years. AI algorithms can analyze vast amounts of data on raw materials, formulations, and product properties to identify the most effective combinations and optimize formulations in real-time.

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Here are the four ways AI and machine learning help in formulation optimization –

1. Predictive Modeling

By using AI algorithms' predictive modeling, paints, and coatings manufacturers are able to simulate how different raw materials and formulations will interact; and then predict the performance and properties of the final product. This helps in optimizing formulations and ends the need for extensive trial-and-error testing.

2. Data Analytics

Painting companies are able to analyze vast amounts of data by using AI algorithms on raw materials, formulations, and product properties to identify patterns and correlations. As a result, identifying new raw materials that can improve performance and reduce costs becomes significantly easier.

3. Process Optimization

AI algorithms also optimize the production process and reduce waste and energy consumption.

4. Real-Time Optimization

The AI optimization of formulations allows chemists to respond to changing market demands and customer needs effectively.

Quality control

AI algorithms allow the coatings industry to find out defects and quality issues quickly and ensure course corrections before it's launched in the market.

Here are three ways AI-based quality control can help the painting and coating industry –

1. Improved Accuracy

AI algorithms detect defects and quality issues quickly and accurately, which ultimately reduces the risk of releasing substandard products.

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2. Increased Efficiency

AI-based quality control systems can process large volumes of data in real-time, which reduces the time and resources required for manual inspection and testing.

3. Enhanced Consistency

AI-based quality control systems ensure that products meet consistent quality standards, regardless of variations in raw materials or production processes. It helps in improving the reliability and reputation of the manufacturer and enhancing customer satisfaction.

Predictive Maintenance

AI-based predictive maintenance systems use advanced algorithms to analyze data on equipment performance, such as vibration, temperature, and energy consumption.

Here are some of the advantages of using AI-based predictive maintenance in the paint and coatings industry:

1. Increased Equipment Reliability

AI-based predictive maintenance systems can identify potential equipment failures before they occur, enabling organizations to perform maintenance proactively. This reduces the risk of unplanned downtime and improves equipment reliability.

2. Cost Savings

Predictive maintenance can help manufacturers reduce maintenance costs, which allows organizations to schedule maintenance proactively, reducing the need for emergency repairs and minimizing downtime.

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3. Improved Efficiency

By reducing downtime and ensuring that equipment is operating at optimal levels, predictive maintenance can improve overall efficiency and productivity. It helps increase the OEE (Overall Equipment Effectiveness) score of the paint manufacturer by reducing downtime and eliminating the risk of unexpected breakdowns during production.

4. Enhanced Safety

Predictive maintenance can help prevent equipment failures that could lead to accidents or injuries, improving safety in the workplace.

How to Adopt AI in the Paints and Coatings Industry?

Many enterprises face challenges when adopting AI to revamp their business processes. Such issues can be overcome by following a proper procedure.

1. Understand your current business position and long-term goals. Align business vision with goals.
2. Create a strategy to integrate AI and ML tools with the existing systems. Make sure the inputs from employees across the enterprise are considered.
3. Hire an offshore AI company to handle the responsibility. Since reputed AI consulting companies offer end-to-end services, you can be assured that everything will go seamlessly.
4. Prioritize your requirements and budget to choose between developing an AI model from scratch or customizing an existing model.
5. Set up integrations in all departments to create a centralized database. The AI consultants will create unique dashboards for real-time analytics.

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6. Train your employees to use the data and analytics for day-to-day decision-making. From R&D to factory production to sales and customer service, artificial intelligence is useful at all levels in a paint company.

7. The AI consulting company will continue to provide maintenance services to minimize the risk of errors and glitches when using the latest applications.

Conclusion

Artificial intelligence, machine learning, and big data analytics will continue to play a vital role in the paints and coatings industry for a long time. With Industry 4.0 gaining popularity, manufacturers have to adopt digital transformation and invest in AI tools, IoT (Internet of Things) devices, etc., to survive market competition.

Consult an offshore AI consulting company and take advantage of its experienced team to achieve your long-term goals. Become a sustainable paint manufacturer and increase your brand value.



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Technical Article

The Importance of Data Science

In today's digital era, data has become the new oil, and Data Science plays a crucial role in extracting valuable insights from vast amounts of information. Data Science combines statistical analysis, machine learning, and domain expertise to uncover patterns, make predictions, and drive decision-making across various industries.

One of the primary reasons for the growing importance of Data Science is its ability to enhance business intelligence. Companies use data-driven strategies to optimize operations, improve customer experiences, and gain a competitive edge. By analyzing consumer behavior, businesses can personalize marketing campaigns, leading to increased customer engagement and revenue.

Moreover, Data Science is transforming healthcare by enabling predictive analytics, disease diagnosis, and personalized medicine. Hospitals and research institutions use data-driven models to detect health risks early, recommend effective treatments, and improve patient outcomes. In finance, Data Science helps in fraud detection, risk assessment, and algorithmic trading, ensuring better financial security and efficiency.

Additionally, Data Science plays a pivotal role in areas such as transportation, manufacturing, and education. Self-driving cars rely on data-driven algorithms to navigate safely, while predictive maintenance in industries reduces downtime and operational costs. In education, data analytics help institutions track student performance and design personalized learning experiences.

Governments and policymakers also benefit from Data Science by making informed decisions on public health, urban planning, and resource allocation. Social media platforms utilize data analytics to detect fake news, enhance security, and improve user experiences.

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In conclusion, Data Science is revolutionizing every sector by transforming raw data into actionable insights. As technology advances, the demand for skilled data scientists continues to rise, making Data Science an indispensable field in the modern world.



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Technical Article

The Crucial Role of Catalysts in Shaping India's Oil and Gas Future: Enhancing Efficiency and Sustainability in Refining

The growth prospects for India's oil and gas sectors indeed look promising, especially given its position as the third-largest consumer of oil globally. With such a significant projected increase in demand for oil, particularly diesel, as well as natural gas, India is clearly poised for a key role in global energy consumption in the coming decades. The country's commitment to increasing its refining capacity is also notable. The plan to add 56 million tonnes per annum by 2028 is a clear sign of how India is preparing to meet its future energy needs.

With these developments, how do we see the role of catalyst in India's energy future? It's easy to overlook these microscopic heroes when we think about the massive scale of oil rigs and refineries, but their role is truly pivotal. Without catalysts, refining would indeed be a much slower, more expensive, and less efficient process. They are the unsung enablers of everything from gasoline to diesel, helping refineries optimize both their production capacity and the quality of their end products. The key processes like cracking, hydro-treating, and isomerization really highlight how specialized catalysts are driving specific reactions. Catalysts not only improve efficiency but also ensure that the desired outputs such as cleaner fuels are achieved. This help refineries to meet strict environmental regulations and reduce emissions, which is especially important in a world increasing focuses on sustainability. Thus the role of catalysts in oil refining is foundational to the entire process. Crude oil is a mixture of large, complex hydrocarbons. In order to make it useful, those molecules need to be broken down into more manageable and specific components like gasoline, diesel, and jet fuel. This is where catalytic processes like cracking and hydrocracking come into play.

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Catalysts enable these reactions to happen much more efficiently by lowering the activation energy—meaning the reaction can occur at lower temperatures and pressures, which saves energy and reduces costs. Without catalysts, refining would be much slower, requiring more extreme conditions and consuming more resources. Some of key catalysts and their roles in the refining process are hydrogenation catalysts, cracking catalysts, isomerization catalysts and alkylation catalysts. Let us explore little bit about these catalyst in following section.

Hydrogenation Catalysts: Supported nickel catalysts are mostly used in this process. These catalysts play a pivotal role in removing sulfur, nitrogen, and oxygen impurities. This process is essential not just for improving the quality of diesel and gasoline but also for ensuring compliance with strict environmental regulations. Removing sulfur, in particular, reduces the emissions of sulfur oxides, which are a major contributor to air pollution. With increasing global concerns about air quality, hydrogenation processes will continue to be critical for the production of cleaner fuels.

Cracking Catalysts: Zeolite catalysts, especially in Fluidized Bed Catalytic Cracking (FCC), are indispensable for converting heavy, less useful hydrocarbons into lighter, more valuable products like gasoline. Zeolites have a unique structure that allows them to selectively break down larger molecules, and their use in FCC is one of the reasons why refining operations are able to maximize yield from crude oil. With the growing demand for gasoline and other fuels, cracking catalysts will remain a backbone of refineries, and innovations in their design may help further optimize this process.

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Isomerization Catalysts: The ability to convert straight-chain hydrocarbons into branched-chain hydrocarbons is crucial for increasing the octane rating of gasoline. The Platinum based catalyst are prominently used in this process. Higher octane fuels improve engine efficiency and reduce knocking. Platinum catalysts are particularly effective in these processes, but as engine technology advances and efficiency standards rise, there may be increasing demand for even more efficient isomerization catalysts to meet stricter fuel specifications.

Alkylation Catalysts: Alkylation is key for producing high-octane gasoline components, and catalysts like hydrofluoric acid help create valuable fuels from lighter hydrocarbons. However, HF can be hazardous to handle, and environmental concerns are growing around its use. As a result, there may be more emphasis on developing safer, more efficient alternatives to HF-based catalysts, possibly driving the development of more advanced or eco-friendly alkylation technologies.

Therefore, continued development of new, safe and more efficient catalysts will be key for improving not only the economic viability of refineries but also the environmental impact. As the demand for oil and gas grows, especially in a country like India, refining processes will need to become even more efficient and cleaner, and catalysts will be central to achieving that.

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Technical Article

Cyber Security

Abstract :

Cyber security are techniques generally set Fourth in published materials that attempt to Safeguard the cyber environment of d Users or organizations. The Field is of growing importance due to increasing reliance on computer systems, including Smart phone, televisions etc.

Introduction:-

The internet has made the world smaller in many ways but it has also opened. We are up to influences that have never before been so worried and so Security grew, Challenging. As Fast as the hacking world grew Faster.

It is protected by internet-connected systems, including hardware, software, and. Data From cyber attacks. The security which is designed to maintain the Confidentiality OF data T integrity and availability is a Subset of Cyber Security Cyber security is important For network data and application security.

With a connected to the increasing amount of people getting internet the security threats. That cause missive harm are increasing also.

Need For Cybersecurity:-

To secure our Financial information.

To Protect ourselves From online Fraud and intently theft.

To Gafeguards Our System From Virces.

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Advantages of Cyber Security :-

Improved security Of Cyber space.

Increase in cyber defence.

Increase in cyber speed.

Protecting company data and information.

Protects Systems and computers against viruses, malware, worms and spyware etc.

Protect networks and resources

Protect against computer hackers and identity theft.

Disadvantages of Cyber security :-

It will be costly for average users.

Firewalls can be difficult to configure correctly.

Need to keep updating the new software in order to keep Security up to date.

Makes Systems slower than before.

Safety Tips :-

Use antivirus software.

Uninstall unnecessary software

Maintain backup.

Use secure connection

Check security settings.

Insert Firewalls, Pop up blocker

Open attachments carefully

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Conclusion:-

The cyber crime or cyber issues have been a time in around as well as information Systems are around us.

To Prevent the cyber issues or to hack in the world, all countries are wanted to make some important and which the harsh laws by cyber crimes are prevented.

Also, want to stop all the illegal websites. That are unauthorized by the of the countries.



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Technical Article

Blockchain Voting System: Transforming the Future of Elections

Introduction:-

The blockchain voting system represents a groundbreaking shift in how elections are conducted worldwide. Traditional voting systems, while effective to a certain extent, suffer from challenges such as voter fraud, lack of transparency, high costs, and logistical inefficiencies. Blockchain technology, with its decentralized and immutable nature, offers a promising solution to these issues.

Blockchain voting ensures that each vote is accurately recorded and cannot be tampered with. This article explores the concept of blockchain-based voting systems, their features, operational mechanisms, benefits, challenges, real-world applications, and the potential impact on the future of elections. As the world increasingly embraces technology in governance, blockchain voting could pave the way for more secure and inclusive democratic processes.

Features of Blockchain Voting

Blockchain-based voting systems have several defining features that make them superior to traditional voting methods:

1. **Transparency:** The blockchain ledger records every vote, which is visible to authorized participants. This ensures that the process is transparent and builds trust among stakeholders.
2. **Security:** Votes are secured through cryptographic algorithms, making it nearly impossible to alter or hack the system.
3. **Immutable Ledger:** Once a vote is recorded on the blockchain, it cannot be modified or deleted, ensuring integrity.

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4. **Decentralization:** Unlike centralized systems, blockchain voting does not rely on a single authority, reducing the risk of manipulation.
5. **Auditability:** The system provides a verifiable record of votes, which can be audited to ensure fairness and accuracy.
6. **Anonymity and Privacy:** While votes are recorded on a public ledger, the identity of voters is protected using advanced encryption techniques.

How Blockchain Voting Works

The operation of a blockchain voting system involves several steps to ensure accuracy, security, and efficiency:

1. **Voter Authentication:** The process begins with voter identification and authentication. This is achieved using digital IDs, biometric verification, or blockchain-based wallets to ensure that only eligible voters can participate.
2. **Casting Votes:** Voters cast their votes through a secure digital platform, such as a mobile app or a blockchain-enabled device. Each vote is encrypted to protect its confidentiality.
3. **Vote Recording:** Once cast, the vote is recorded as a transaction on the blockchain. This transaction is timestamped and added to a block in the chain.
4. **Verification through Consensus:** Blockchain networks use consensus mechanisms, such as proof-of-stake (PoS) or proof-of-work (PoW), to validate the transactions. This ensures that each vote is legitimate and prevents double voting.

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5. **Real-Time Tallying:** Unlike traditional systems, blockchain voting allows for instant tallying of results. The results are transparent and auditable in real time.

Benefits of Blockchain Voting

The adoption of blockchain voting systems offers significant advantages, making it a viable alternative to traditional voting methods:

1. **Fraud Prevention:** By leveraging the immutability of blockchain, the system eliminates risks of tampering, double voting, or vote deletion.
2. **Cost Reduction:** Blockchain voting reduces costs associated with printing ballots, setting up polling stations, and hiring staff.
3. **Accessibility:** Remote voting becomes possible, enabling participation from voters in remote areas, expatriates, and persons with disabilities.
4. **Efficiency:** Votes are recorded and counted in real time, significantly reducing the time taken to announce results.
5. **Increased Trust:** Transparency and auditability ensure that voters trust the electoral process, leading to higher voter turnout.

Challenges of Blockchain Voting

Despite its numerous benefits, blockchain voting systems face several challenges that must be addressed for widespread adoption:

1. **Digital Literacy:** Not all voters are familiar with digital technology, especially in rural or underdeveloped regions. Educational campaigns are required to bridge this gap.
2. **High Initial Costs:** Implementing blockchain infrastructure requires significant investment in technology, hardware, and software.

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3. **Cybersecurity Threats:** Although blockchain is secure, the platforms used for voting (e.g., apps, devices) may be vulnerable to attacks.
4. **Regulatory and Legal Issues:** Governments must create legal frameworks to govern blockchain voting and ensure compliance with existing laws.
5. **Scalability:** Blockchain networks must be scalable to handle millions of votes without delays or performance issues.

Real-World Implementations

Several countries and organizations have already begun exploring blockchain-based voting systems:

1. **Estonia:** Known for its advanced digital governance, Estonia has integrated blockchain into its i-Voting system.
2. **West Virginia, USA:** In the 2018 midterm elections, blockchain voting was piloted for overseas military personnel.
3. **Switzerland:** The city of Zug, also known as Crypto Valley, conducted blockchain voting trials to explore its feasibility.
4. **India:** The Election Commission of India is researching blockchain-based solutions to address voter fraud and improve transparency.
5. **South Korea:** Trials have been conducted to test the effectiveness of blockchain voting for smaller elections and organizational decisions.

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Conclusion:-

Blockchain voting systems have the potential to revolutionize the way elections are conducted. By ensuring transparency, security, and efficiency, these systems address the shortcomings of traditional voting methods. Although challenges such as digital literacy, implementation costs, and cybersecurity must be addressed, the benefits far outweigh the drawbacks.

As governments and organizations continue to explore blockchain technology, the future of elections could become more inclusive, trustworthy, and technologically advanced. Blockchain voting is not just a concept but a step toward strengthening democracy worldwide.



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Technical Article

Green Chemistry: A Step Towards Sustainable Industries

Introduction:-

In the modern era, industrial growth has brought significant advancements but also severe environmental challenges. Pollution, resource depletion, and climate change are growing concerns, urging industries to adopt sustainable practices. One promising solution is Green Chemistry, a revolutionary approach that minimizes hazardous substances and promotes eco-friendly processes. It is not just a scientific concept but a movement toward a cleaner and greener future.

What is Green Chemistry?

Green Chemistry, also known as sustainable chemistry, focuses on designing chemical products and processes that reduce or eliminate hazardous substances. The 12 Principles of Green Chemistry, introduced by Paul Anastas and John Warner in 1998, emphasize the importance of waste prevention, energy efficiency, and the use of renewable resources. These principles guide industries toward sustainability without compromising efficiency and profitability.

Green Chemistry in Industries

Industries have been major contributors to environmental pollution, but Green Chemistry offers innovative solutions to make them more sustainable.

1. Eco-Friendly Solvents

Traditional industrial processes often use toxic solvents that harm the environment. Green Chemistry promotes water-based or bio-based solvents, reducing toxic waste and improving safety. For example, supercritical carbon dioxide (SC-CO₂) is now used in dry cleaning, replacing harmful chlorinated solvents.

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2. Biodegradable Plastics

Plastic pollution is a global crisis, but Green Chemistry has introduced biodegradable plastics derived from corn starch, sugarcane, and other natural sources. These plastics break down naturally, reducing landfill waste and marine pollution.

3. Renewable Energy and Catalysis

Industries rely heavily on fossil fuels, leading to greenhouse gas emissions. Green Chemistry encourages the use of renewable energy sources like solar, wind, and biofuels. Additionally, catalysis helps industries improve reaction efficiency, reducing energy consumption and byproducts. For instance, enzymatic catalysts in detergent manufacturing reduce water pollution and energy use.

4. Safer Pharmaceuticals

Pharmaceutical industries generate hazardous waste during drug production. Green Chemistry promotes atom economy, where reactions maximize the use of raw materials with minimal waste. Companies like Pfizer and Merck have adopted Green Chemistry to develop cleaner drug manufacturing processes.

The Impact of Green Chemistry

Green Chemistry is transforming industries by:

1. Reducing environmental pollution
2. Minimizing health hazards for workers and consumers
3. Lowering production costs through efficient resource use
4. Encouraging innovation and sustainable economic growth
5. Challenges and the Road Ahead

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Conclusion:-

Green Chemistry is not just an alternative—it is a necessity for a sustainable future. Industries must embrace this approach to protect the environment while maintaining economic progress. As technology advances, Green Chemistry will continue to evolve, paving the way for a cleaner, healthier, and more sustainable world.



DHARMIK PATEL
DE, Sem VI
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Literary Section

मृत्यु

मृत्यु ,क्या है यह मृत्यु

अग्नि की लपटों को बाहों में भर कर गले लगाना

यह है मृत्यु.. (१)

सफेद चादर को ओढ़कर शव मेरा लेकर चार लोग अपना कंधा देकर

लकड़ियों को पलंग पर लेटकर लंबी नींद लेना

यह है मृत्यु.. (२)

क्यों आखिर भयभीत हो जाते हो मृत्यु से

बताकर सत्य इस संसार के माया का श्मशान में महादेव से मिलाए

यह है मृत्यु... (३)

राजा हो यह नौकर अंत केवल मृत्यु है

और रह जाएगा एक ही राम नाम सत्य है

यह है मृत्यु... (४)

क्या जीत क्या हार

यह पंचभूत हो जाएगा राख

यह है मृत्यु... (५)

Literary Section

मृत्यु

मृत्यु से भयभीत होते हो
और मोक्ष भी प्राप्त करना चाहते हो
मोक्ष भी प्राप्त भी मृत्यु है
यह है मृत्यु... (६)

मृत्यु छुटकारा दुखो से खुशी से दिलाएगा
ले जाएगा अनंत शांति की और
यह है मृत्यु... (७)

मृत्यु के वक्त कमाल की घटना होती है
बदनाम व्यक्ति भी नाम काम लेता है
करते थे लोग बुराई उस व्यक्ति के
जब शव को देखे कहते बड़े नेक थे और उच्च विचार थे
यह है मृत्यु... (८)

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Literary Section

गणतंत्र दिवस

हो गए साल छिहतर अपने संविधान को,
सात दशक में किया बहुत कुछ, गिनती नहीं बताने को।

झांकी निकले रामचन्द्र की, पेट तुम्हारा दुखता है,
गीदड़ शोर मचाए, फिर भी शेर कहां पर रुकता है।

अरे राफेल की खरीदी पर, तुम उंगली उठाते हो
सच सामने आते ही तुम क्वारांटिन हो जाते हो।

अरे सर्जिकल स्ट्राइक पर सवाल उठाते हो प्रीये,
सच सामने आते ही गायब हो जाते ही प्रिये।

पाकिस्तान को सर्जिकल स्ट्राइक से सबक सीखा दिया प्रिए,
चीन को भी गलवान घाटीमें दे दिया जवाब प्रिए।

कोविड के टाइम पर सारे पड़ोसियों को वैक्सीन पहुंचाई,
लेकिन तो भी हमारे ही पीठ के पीछे राजनीति करीई।

दुनिया पहुंच गई चांद तक और हम मंगल तक हो आए,
फिर भी हम जमीन के बेटे, तुम्हे कहां तक समझाए।

आज भारत दुनिया की चौथी अर्थव्यवस्था हो चुकी है प्रिए,
तो भी जातिवाद के नाम पे ही वोट मांग रहे हैं प्रिए।

अरे जीतो चाहे हारो, पर ये बात याद रखो प्रिये,
देश कि डेमोक्रेसी पर यूं ऐसे आघात तो ना करो प्रिए।

Ankur Gheewala
Assistant Professor
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Literary Section

The Key to Unity

Ravi was ready to go to school but as usual the same old morning chatter and bickering was going on in the house.

Mom was feeling the strain, “I have a ladies lunch to go to today and as always, I have to do everything for everyone! And if that wasn’t enough you all order me about telling me to bring this and bring that...”

And Dad was also at it, “Don’t blame anyone else if you’re struggling to cope with your own chores. I’m late in reaching the office every day because of you. I can never find anything in its place.”

Grandad found it necessary to add to the commotion by asking, “Am I going to get my morning cup of tea in the afternoon? And these newspaper people seem to be printing the same stuff every day!”

Ravi went to ask his older brother if he would be able to drop him to school.

“Dad...! Why is the internet so slow? Oh Ravi, I’ve got a conversation going on with one of my friends on Facebook. Please get a ride with your classmate Khushi. Her dad will take you,” said Ravi’s brother, his eyes glued to the laptop.

Sad-faced Ravi said, “Bye, Jai Shree Krishna”, as he left the house. But everyone was so engrossed in what they were doing that nobody responded!

As soon as Ravi approached Khushi’s house, her dad saw him coming and started his scooter. “Come on son! Climb on, we were waiting for you.” Ravi hopped onto the scooter, behind Khushi, and enquired, “Uncle, how did you know about today’s....er... shouting match at my house...?”

Khushi’s mom handed her schoolbag and said, “You can talk when you get back. It’s time you get a move on or else you’ll be late,” Khushi’s grandma waved to her with a smile and said, “Bye”.

Literary Section

The entire way, Ravi kept thinking, ‘why is my home not as happy and peaceful as Khushi’s?’

The same thought bothered him the whole day at school and he felt the same doom and gloom when he got back home later that day...

To cheer Ravi up, Khushi’s grandma said, “Oh you’re back dear! How was your day? Wash your hands, eat something, and tell me what you did at school today.”

In the meantime, Khushi’s mum brought milk and snacks for both of them and said, “Ravi, there is no one at your house right now. The key is here and your mom will come to collect you in the evening.”

Both kids had their snacks and finished their homework. Afterwards Khushi said, “Come on Ravi, let’s play outside.” Ravi did not respond.

He didn't want to play and so he sat next to Khushi’s grandmother on the swing. As Khushi joined them on the swing, she said, “Grandma, today we were given group projects at school and there are four students in each group. Ravi and I are in the same group but the other two boys in our group are new.”

Khushi’s grandma looked at Ravi and said, “Now that those new boys are in your group, you will all work together, won’t you?”

Ravi replied, “They are not our friends. Plus, they do things in a different way because they are from another school.”

Grandma replied, “How beautiful would a garland look if it is made with flowers having a variety of different colours, shapes and fragrances? So, take a look at their methods and show them yours too, then select the method which everyone is comfortable with .”

Grandma explained further, “An old father once gave a stick to each of his four sons to break. Each stick was broken with ease but when he gave them a bundle of sticks tied together to break, nobody could break it. Do you remember that, Story?”

Literary Section

There is strength in unity. Thousands of stories have been created to explain the importance of unity. There are so many historical events which clearly illustrate that even large battalions are defeated when there is a lack of unity amongst the troops. Oh! And when there is no unity, it is easy for an outsider to take advantage and to cause us harm. Whether it is at home or anywhere else, If there is no unity no task is done proficiently but where there is togetherness, nothing seems difficult.”

Ravi understood what. Khushi’s grandma was hinting at and quietly asked, “Grandma, I have heard many stories to do with unity and togetherness, but how can unity be maintained?”

Khushi said, “Grandma, those two boys keep doing things their own way and don’t even show us or tell us anything.”

Grandmother laughed and asked, “But have you showed them anything of yours? Have you asked them anything?”

Ravi replied, “No”.

“In that case, tomorrow you go and talk to them and say that, ‘We are one group. So, tell us, how do you want to do this?’ And then you can all equally share the different tasks which need to be done so that each of you gets a quarter of the total load. That way, all of you as a group will benefit from each other’s efforts,” explained Grandma. “If a person behaves awkwardly with us, we should be straightforward. And if that Person tries to Create division, we Should continue Telling them that we Are one. If you live in Harmony with everyone Around you, everyone Stands to benefit from Each other’s knowhow.”

Grandma explained to Ravi, “Even at home, all the while that selfishness remains, unity is not possible. Everyone should try to reconcile their differences and find a solution. We should show readiness to maintain unity when others are ready to start an argument.”

Literary Section

Ravi went home in the evening. In his bed he kept mulling over everything that Khushi's grandmother had told them. He fell asleep after making a decision about something.

The next day, Ravi and Khushi's did as they had been advised and lovingly approached the two boys to discuss their project. It just so happened that everyone helped each other and their project was the first to be finished. And not only that, but they also made two new close friends.

That day Ravi went home a very happy boy Indeed. After completing his homework, he tidied up and put away his dad's things which had been lying around. That evening, he helped his older brother to tidy up his room and also massaged his grandfather's legs before going to bed.

The next morning, he got up early and after getting ready he helped his mom with a few of her chares. He served his granddad tea and his favourite breakfast items at the table.

His family were surprised by all this unusual behaviour. Instead of being his sad and quiet self, today Ravi was cheerful and helping everyone with something or the other with enthusiasm!

Ravi's grandad expressed his surprise and asked, "My dear boy, why are you doing everyone's work for the youngest member of the household. You just take yourself off to school and don't worry about anyone else. They'll see to their own work."

Ravi responded, "We are all one, so isn't everyone's work my work too?" Listening to the youngest family member's unfailing talk, everyone was speechless. It was as if their eyes had suddenly opened.

That day, Ravi's older brother went to drop him off to school on his motorbike and said, "From now on, I will drop you and Khushi's to school on my way to college and will pick you up on my way back. And yes, please let Khushi's dad know so that he can go straight to work from now on."

Literary Section

To Ravi's astonishment, the next morning was such that everyone was helping each other instead of minding their own business! Mom and dad were doing their morning chores together and granddad was also doing small chores here and there. There was no complaining or shouting. Satisfaction and joy was seen overflowing on everyone's faces.

Ravi smiled and thanked Khushi's grandmother in his mind for showing him the key to unity.

So friends, did you understand? Everyone probably knows that where there is unity there is always peace. But the key for how unity can be achieved is what we have acquired today, right?

It is not possible for unity to exist where there is selfishness. Like Ravi, you too should try to use this key at home, at school and wherever else necessary. It will create an atmosphere of peace and happiness and solutions to any problems will be found automatically.



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Enrolment no. 240102103007

Program/sem: BE/II

Branch/Department: CO

Sports Gallery

Under the expert guidance of Parasmal Jain, the Sports and Cultural Coordinator, UPL University of Sustainable Technology has achieved remarkable milestones in the Khel-Mahakumbh Gujarat 3.0, 2025. Krushnarajsinh (Enrolment No. 168), a student of Diploma Chemical Engineering (1st Year, 2nd Semester, Class G3), brought immense pride to the university by becoming the champion in the Wrestling District Khel-Mahakumbh 3.0, 2025 Tournament held on Friday, 16th January 2025.



His exceptional performance earned him a cash prize of ₹3,000 and secured his selection to represent UPL University at the State Wrestling Championship, the date of which will be announced soon. Our Volleyball team also achieved a remarkable victory in the Taluka-level Volleyball Tournament held at Shree Rang Navchetan Vidhya Sankul, Valiya, showcasing exceptional skill, determination, and teamwork to emerge as champions and qualify for the District-level Volleyball Tournament. Similarly, the Kabaddi team delivered an outstanding performance at the Taluka-level Kabaddi Tournament, also held at Shree Rang Navchetan Vidhya Sankul, Valiya, and secured their place in the District-level competition. More than 60 students from various departments of UPL University participated in individual and team events of Khel-Mahakumbh Gujarat 3.0, 2025.

Sports Gallery

In team events, Kabaddi and Volleyball teams emerged victorious and qualified for district-level tournaments, while the Basketball team displayed commendable performances. In individual events, athletics stood out with students like Rudhra Rana (400m + 100m), Chitra Singh (200m + 400m), and Pruthvi Joshi (200m + Long Jump) being selected for district-level events. In Judo and Boxing, our students achieved direct selection for the state-level competition. Additionally, participants in Badminton, Table Tennis, and Chess demonstrated exceptional talent and commitment.

These achievements reflect the dedication, determination, and sportsmanship of our students, guided by the unwavering support of Mr. Parasmal Jain. We take immense pride in their accomplishments and look forward to seeing them shine at higher levels of competition.



Students' Corner



Art by- Dimpal nikam
Enrollment No. : 230101103009
Program/sem : DE/4
Department : CO

Students' Corner



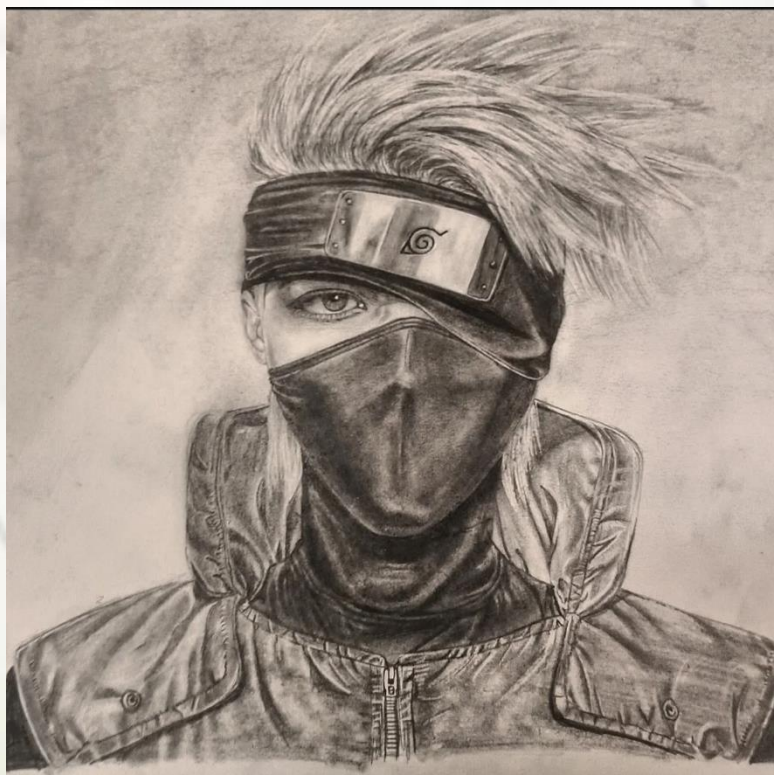
Art by: Pandey Nitika Dharmendra
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Students' Corner



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Students' Corner



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Students' Corner

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Diya Ghodasara
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Fun Zone

Find the words from the following puzzle:

**Byte, Cloud, Miracle, Software,
Mouse, Security, Chair**

M	K	T	V	E	T	Y	B	Q	D
I	Y	P	B	C	C	C	P	X	X
R	R	C	B	P	L	Q	Y	N	M
A	E	C	H	O	X	D	X	O	A
C	A	Y	U	A	S	I	U	W	V
L	S	D	N	W	I	S	T	B	W
E	G	P	F	D	E	R	M	Z	D
T	S	O	F	T	W	A	R	E	F
S	E	C	U	R	I	T	Y	W	X
O	O	H	B	U	J	R	X	U	H

Fun Zone

1. Why did the scarecrow win an award?

Because he was outstanding in his field.

2. Parallel lines have so much in common.

It's a shame they'll never meet.

3. Bhai tere ko ek baat batu

: ha suna

Le-sun

4. Why don't some couples go to the gym?

Because some relationships don't work out!

5. Aaj kal humare liye sab kuch online hai...

Toh phir meri pichli love story bhi toh "not found" hi thi!

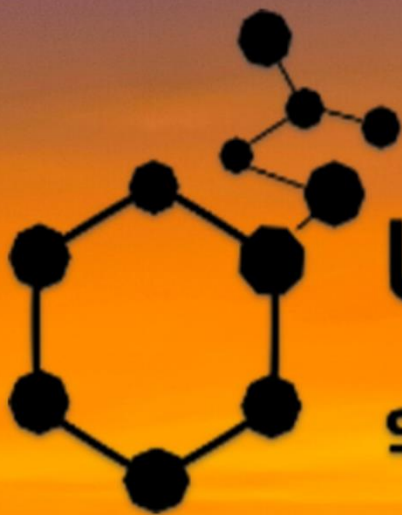


Om Parmar

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