



# KALEIDOSCOPE

Published by  
DEPARTMENT OF ELECTRICAL ENGINEERING  
JORHAT ENGINEERING COLLEGE  
2021 Edition



## VISION

Develop as Centre of excellence in electrical engineering for producing competent professionals for sustainable industrial and societal growth



## EDITORIAL BOARD

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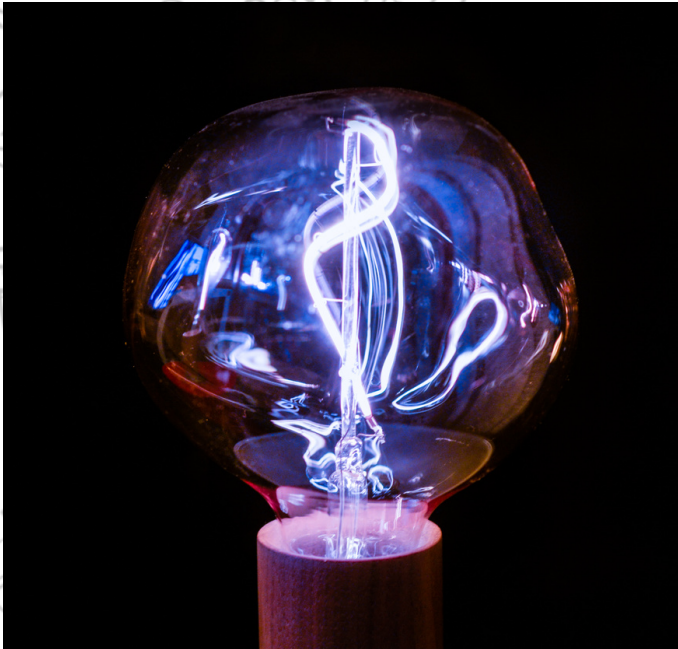
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## MISSION

The Mission of Electrical Engineering Graduate Program is

- 1.To impart quality technical education at UG, PG and PhD levels.
- 2.To promote continuing effective interactions with academia, alumni and industry.
- 3.To inculcate creativity, societal and ethical values.
- 4.To develop a sustainable learning environment.

# ELECTRICAL ENGINEERING DEPARTMENT



Jorhat Engineering College founded in 1960 by the government of Assam, is one amongst the top quality government engineering college in Assam, northeast India. The college, affiliated with Assam Science and Technology University, is accredited by the All India Council for Technical Education. It has five four-year undergraduate programs: Civil Engineering, Computer Science and Engineering, Electrical Engineering, Instrumentation and Mechanical Engineering. It also offers master's courses in Computer Application (MCA), Civil Engineering (Design of civil engineering structures) Electrical Engineering (Instrumentation and control engineering), Mechanical Engineering (Production and industrial engineering). It also offers Ph.D courses.

The department of Electrical Engineering was established in the year 1961 just after the year of establishment of the college in 1960 with an initial intake capacity of 30 students which was increased to 60 after few years. The department offers B.E. (Instrumentation Engineering) degree course..

## HEAD OF THE DEPARTMENT'S COLUMN



The success of publishing the first print of our department newsletter "Kaleidoscope" prepared our students and professors to work hard for publishing this second issue and achieve another milestone. I am confident that this issue of "Kaleidoscope" will send a positive signal to the staff, students, and people who are interested in technical education and technology. A newsletter is like a mirror that reflects a clear picture of the various activities undertaken by a department and develops writing skills among the students and the teaching faculty. I congratulate the Editorial Board members of this newsletter as well as the contributors, who have played a wonderful role in accomplishing the task.

## PRINCIPAL'S COLUMN



I am delighted to know that the department of electrical engineering of Jorhat Engineering College is going to publish Kaleidoscope for the year 2021. The initiative taken by the department will carry worthful information to the readers. I sincerely hope that such type of publication will be continued in the coming days in a regular manner.

I wish great success for this issue to the publication team.



# FACULTIES

## ELECTRICAL ENGINEERING DEPARTMENT



**DR. ADITYA BIHAR KANDALI**  
**HOD AND PROFESSOR**



**DR. MRINAL BURAGOHAIN**  
**PROFESSOR**



**NIPAN KUMAR**  
**ASSISTANT PROFESSOR**



**PAPU MONI SAIKIA**  
**ASSISTANT PROFESSOR**



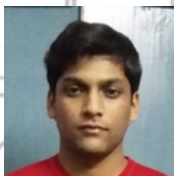
**TILOK BARUAH**  
**ASSISTANT PROFESSOR**



**PRANABJYOTI HALOI**  
**ASSOCIATE PROFESSOR**



**POOJA BORA**  
**ASSISTANT PROFESSOR**



**DR. SUMAN SUTRADHAR**  
**ASSISTANT PROFESSOR**



**JYOTISIKHA SHARMA**  
**ASSISTANT PROFESSOR**



**TUSHAR KUMAR DASH**  
**ASSISTANT PROFESSOR**



**PANKAJ SHARMA**  
**ASSISTANT PROFESSOR**



**MOUSUMI PATOWARY**  
**ASSISTANT PROFESSOR**



**RAJA RAM KUMAR**  
**ASSISTANT PROFESSOR**

# DEPARTMENTAL SONG

উত্তৰ-পূবৰ ৰেঙণি তুমি,  
উনৈছশ ষাঠিৰেপৰা জিলিকি থকা  
এখনি ৰঙীন আকাশ তুমি ।  
তোমাৰ বুকুৰে এখনি বৈদ্যুতিক পথাৰ,  
আৰম্ভ হৈছিল প্ৰযুক্তিবিদ্যাৰে  
অসম পোহৰাই তোলাৰ জোৱাৰ ।

জিলিকি ৰৈছে ভোগদৈৰ পাৰ !  
গঢ়ি উঠিছে কত উজ্জ্বল নক্ষত্ৰ,  
বৈদ্যুতিকতাৰ ৰং সানি  
হয় বৈদ্যুতিক অভিযন্তা আমি।

এন্ধাৰ নেওচি আগুৱাই নিও ,  
যন্ত্ৰকো পৰিচালিত কৰো ,  
ইলেক্ট্ৰনৰ গতিৰ দৰে মুকলি হৈ  
পোহৰ বিলাও।  
একো একোজন বৈদ্যুতিক অভিযন্তা আমি।

আহা আমি খোজ দিও  
প্ৰগতিৰ পথত অগ্ৰসৰৰ দিশে,  
প্ৰযুক্তিবিদ্যাৰে নিজৰ লগতে  
চৌপাশ উজ্জ্বল কৰাৰ উদ্দেশ্যে ।

কথা : বৰষা ৰাণী বৰা  
সুৰ : অৰ্ণৱ কল্লোল বৰা  
নীলাভ নয়ন ফুকন



# DEPARTMENTAL ACHIEVEMENTS

- Bipakshi Gogoi, Bipanchi Talukdar and Deepakhi Kashyap of 3rd semester were part of the team that was awarded the consolation prize in the Innovative Idea Competition organized by Tezpur University in 2021.
- Dujita Borah, a 3rd semester student, got 2nd prize in online intra college dance competition organized by the Diamond Jubilee Celebration Committee of JEC for the completion of 60 glorious years of college in the year 2021.
- In March 2019, Manas Pratim Goswami (then in first year) presented a model in Research Conclave at IIT Guwahati.



# DEPARTMENTAL ACHIEVEMENTS

- Nisanta Sarma, a student of 3rd semester, got 3rd prize in singing competition held in Jorhat Engineering College Diamond Jubilee Celebration.



- Dibyajyoti Chatetrjee and Pooja Rani Borah of 7th Semester won a medal for their work at a competition at IIT Bombay.



- Nikita Sankar, 5th sem B.Tech student got 2nd prize in race competition of Induction program conducted by JEC in 2019.





# PLACEMENT RECORD

- Pallab Jyoti Borah got placed in Oil India Limited in 2021.



- Kirti Kamal Saikia, Preetipurna Das, Chandan Chetri and Anshuman Baruah got placed in Cognizant in 2020.



- Priyanka Devi from 2020 batch and Amarjit Saikia, Anupam Saikia, Kritika Saharia and Meghna Saikia from 2021 batch secured a job at Vedanta Limited.



- Ankita Dey, Dibyajyoti Chatterjee and Pooja Rani Borah got placed in Capgemini in 2020.



- Jyotisnata Pathak secured a job in Hindustan Unilever Limited in 2021.



- Priyabrat Das got placed at NRL in the year 2021



# GATE QUALIFIED CANDIDATES

The following students qualified for GATE exam in the year 2021:



Dibakar Paul



Dibyajyoti Chatterjee



Pooja Rani Borah



Angshuman Baruah




Arshad Ali



# RESEARCH WORKS

- Low- cost Power Monitoring System' by Anshuman Baruah , Pooja Rani Borah , Dibyajyoti Chaterjee published in 2019 2nd IEEE International Conference on Power Energy, Environment Intelligent Control
- 'Smart Streetlight with Power Vending Scheme' by AnshumanBaruah , Pooja Rani Borah , Dibyajyoti Chaterjee published in 2019 2nd IEEE International Conference on Power Energy, Environment Intelligent Control.
- Sanjita Barman and A.B. Kandali, "International Journal of Innovative Research in Science and Engineering", Modeling of Speaker Recognition with MFCC and Neural Network, Volume 7, Issue 08, August 2021.

- 
- The background of the slide is a dark blue rectangle with a repeating pattern of white line-art icons. These icons include various electrical components and tools: light bulbs, power outlets, USB cables, multimeters, and screwdrivers. The icons are scattered across the entire background, creating a technical or engineering-themed aesthetic.
- G. Michael and A.B. Kandali, “Emotion Recognition of Manipuri Speech using Convolution Neural Network” , International Journal of Recent Technology and Engineering, Volume-9 Issue-1, May 2020.
  - N.K Kaphungkui and A. B. Kandali, “Text Dependent Speaker Verification with Neural Network” , Journal on Digital Signal Processing, Volume-7 Issue-4, October-December 2019.
  - Chiranjib Sarma and A. B. Kandali, “Solar Panel Cleaning Robot” , International Journal for Research in Engineering Application & Management, Volume 05, Issue 03, June 2019.



# PHD SCHOLARS



**TILOK BARUAH**



**GUIDSGUY ROBERT  
MICHAEL**



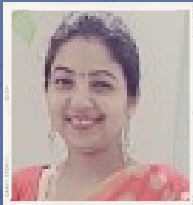
**PAPUMONI SAIKIA**



**PRANABJYOTI LAHON**



**NIPAN KUMAR DAS**



**MONISHA PATHAK**



**N.K KAPHUNGKI**



**KAKOLI GOSWAMI**



**MANISH SHANKAR KAUSHIK**

The background of the entire page is a light gray collage of various electrical symbols and tools. These include multimeters, power outlets, light bulbs, cables, and other electronic components, all rendered in a simple, sketchy line-art style.

# PROGRAM DETAILS

## PROGRAM DETAILS

*Jorhat Engineering College, Assam has conducted a 3 week long Induction Program for the first-year students of 4-year Bachelor of Engineering Degree course in August 2019*

*Jorhat Engineering College, Assam has conducted a 3 week long Induction Program for the first year students of 4-year Bachelor of Engineering Degree course in August 2018.*

*Jorhat Engineering College, Assam has conducted a 1 week long Induction Program for the first-year students of 4-year Bachelor of Engineering Degree course in January 2018 for 1st Year Students.*



# ACTIVITIES

Activity	Date	Name of event	Organized by
Workshop	23rd March 2019	Workshop on Electrical Safety, Regulation and its implementation in industries	Electrical Engg. Dept
Student training	4th Feb to 8th Feb 2020	MS EXCEL	Electrical Engg Dept
Webinar	9th June 2020	Nuclear Technology and Opportunities in BARC	Electrical Engg Dept
Industrial Visit	10th October 2021	One day industrial visit to Borhola GGS & GCP, ONCGC	TPC JEC

# ARTICLES

## The Rise of EV

### Introduction

Electric vehicles (EVs) are becoming increasingly popular, due to their many benefits over traditional gasoline-powered cars. EVs are cheaper to operate and maintain, emit no pollutants, and have a smaller environmental footprint than gas cars. Additionally, EV technology is constantly improving, making them more efficient and capable of longer range. As the world becomes more aware of the need to reduce emissions and combat climate change, electric vehicles are an attractive option for those looking to do their part. In the past decade, EV sales have grown significantly, and they are only expected to increase in the coming years. With advances in battery technology and a growing network of charging stations, electric vehicles are poised to take over the automotive market.

### The History of Electric Vehicles

Electric vehicles have been around for over a century, but they've only recently begun to gain popularity as an alternative to gasoline-powered cars. There are a number of reasons for this: electric cars are cheaper to operate and maintain, they emit no pollutants, and they're becoming increasingly more efficient.

One of the first mass-produced electric vehicles was the Chevy Volt, which was introduced in 2010. The Volt was a breakthrough car because it could travel up to 40 miles on a single charge, making it ideal for commuting. Since then, other automakers have followed suit with their own electric vehicle offerings.

The rise of electric vehicles has coincided with the rise of renewable energy sources like solar and wind power. That's because charging an electric car is much cheaper when you can do it with clean energy instead of dirty fossil fuels.



So what does the future hold for electric vehicles? It's hard to say for sure, but one thing is certain: they're here to stay.

The electric car has a long and interesting history. It was first invented in the 1830s by Scottish inventor Robert Anderson. Anderson's invention was inspired by the work of Hungarian inventor Anyos Jedlik, who had created a small electric motor in 1828.

Anderson's electric car was powered by a single battery and could reach speeds of up to 4 miles per hour (6 km/h). The invention was not commercially successful, however, and it wasn't until almost 50 years later that another attempt was made to create an electric car.

In 1890, American inventor William Morrison built the first successful electric car in the United States. Morrison's vehicle was powered by six batteries and could reach speeds of up to 14 miles per hour (23 km/h). It was also significantly larger than Anderson's earlier invention, seating four people comfortably.

Electric cars began to gain popularity in the early 1900s as a cleaner and quieter alternative to gasoline-powered vehicles. Sales of electric cars peaked in 1912, when more than 33,000 were sold in the United States. However, sales declined sharply after World War I as gasoline cars became cheaper and more reliable.

By the mid-1950s, only a handful of companies were still producing electric cars. In fact, many people believed that the electric car had reached the end of its usefulness. This changed in the early 21st century as advances in battery technology and renewable energy made electric cars more viable than ever before.



## The benefits of electric vehicles

Electric cars are becoming increasingly popular, with more and more people making the switch from traditional petrol or diesel vehicles. There are many benefits of electric cars, including being cheaper to run, better for the environment and quieter than their petrol or diesel counterparts. Electric cars are cheaper to run than petrol or diesel cars, as you don't have to pay for fuel. You only need to charge your car's battery, which costs much less than filling up a tank of petrol or diesel. Electric cars are also better for the environment as they produce zero emissions. This means that they don't contribute to air pollution or climate change. Electric cars are also much quieter than petrol or diesel cars, so you can enjoy a peaceful journey without all the noise.

## The drawbacks of electric cars

Electric cars have many advantages over traditional gasoline-powered cars. However, there are also some drawbacks to consider. Electric cars are more expensive to buy than gasoline-powered cars. The batteries that power electric cars are also very expensive, and need to be replaced every few years. Electric cars also take longer to charge than gasoline-powered cars. Electric cars produce no emissions, which is great for the environment. However, the electricity that powers electric cars does come from power plants, which do produce emissions. So, while electric cars are better for the environment than gasoline-powered cars, they're not perfect. Overall, electric cars have a lot of great benefits. However, there are some drawbacks to consider before making the switch from a gasoline-powered car to an electric car.

## The future of electric cars

Electric cars are the future of transportation. They are cheaper to operate and maintain than gas cars, and they emit far less pollution. Electric cars also have the potential to be much more efficient than gas cars, using less energy to travel the same distance.

The rise of electric vehicles is inevitable. Gasoline cars are becoming increasingly expensive to operate and maintain, while electric cars are getting cheaper every year. In addition, electric cars emit far less pollution than gasoline cars, making them much better for the environment.

However, there are still some challenges that need to be addressed before electric cars can truly take over the automotive market. One of the biggest challenges is range anxiety: the fear that an electric car will run out of power before reaching its destination. This is a valid concern, but it is slowly being addressed as battery technology improves and charging infrastructure becomes more widespread.

Another challenge facing electric vehicles is public perception. Many people still see electric cars as expensive novelties rather than practical transportation options. This needs to change if electric vehicles are going to reach their full potential.

The future of electric vehicles is bright. They offer many advantages over gasoline cars and these advantages will only become more pronounced as time goes on. With continued improvements in battery technology and charging infrastructure, there is no doubt that electric vehicles will eventually dominate the automotive market.

## How to buy an electric car

If you're considering buying an electric car, there are a few things you need to know. Here's a guide on how to buy an electric car:

1. Determine your needs and budget. Decide what kind of electric car is right for you and your budget. There are many different types and models of electric cars available on the market, so do your research before making a purchase.
2. Consider charging options. Charging an electric car can be done in a variety of ways, so it's important to consider which option is best for you. Home charging stations are becoming increasingly common, but public charging stations are also available in some areas.
3. Calculate the cost of ownership. Electric cars often have lower operating costs than traditional gasoline-powered vehicles, but they can also come with a higher up-front price tag. Be sure to calculate the total cost of ownership before making your purchase.
4. Find incentives and rebates. In many cases, government incentives and rebates are available for electric car buyers. These can help offset the cost of purchasing an electric car, so be sure to check for them before making your final decision.

## Conclusion

All in all, the rise of electric vehicles is a positive trend that is sure to have many benefits for both individuals and the environment. With advances in technology, it is only a matter of time before electric vehicles become the norm. So why not get ahead of the curve and try out an electric vehicle today?

**BEDANTA BIKASH BHUYAN**  
**3RD SEMESTER**

# ROLE OF ELECTRICAL ENGINEERING IN HEALTH CARE

The intersection of engineering and health-care innovation is helping to improve the lives of many people around the world. When thinking about innovators in the world of health care, electrical engineers may not be the first group of people to pop into your brain. However, while we might think that the two fields rarely overlap, medical and electrical engineering intersect in important ways for society. For example, in 2012, the Atlantic reported on electrical engineer Chris Toumazou, who “unexpectedly found himself helping to design medical devices.” As part of his work, Chris figured out how to implant microchips into children’s brains in the form of cochlear implants that give deaf children the ability to hear. The true genius lies in Chris’s ability to translate the meticulous codes of both engineering circuits and the human body. Part of this involved the creation of a new IP address concept for the human body, including a neural IP, a biological IP, a metabolic IP, and a pancreatic IP. Ultimately, there are endless ways in which electrical engineering can impact health care, all of which can fall into three main groups: optimizing medical care with advanced technology, enabling more accurate diagnoses and treatments, and making improvements in the patient experience.

Improvements to health-care technology equate to potential improvements in human life. Here, electrical engineering can offer technologically advanced processes to improve upon current health-care standards. Another way that electrical engineering can positively impact the medical field is by helping to solve difficult socio-medical issues, such as sexually transmitted diseases. Studies show that STDs are spreading at an alarming rate, with 20 million new infections every year, affecting more than half of all people in the U.S. over the course of their lives. Currently, magnetic resonance imaging (MRI) and computed tomography (CT) machines are used to take a deeper look inside human bodies and diagnose medical conditions. The field of electrical engineering is now introducing a new way to do this: electromagnetic acoustic imaging (EMAI).

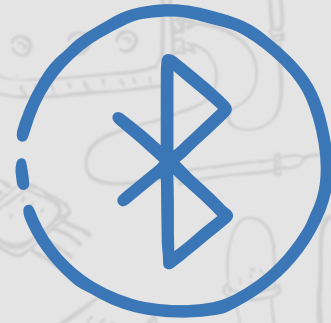


According to the Institute of Electrical and Electronics Engineers (IEEE), EMAI “uses long-wavelength RF electromagnetic waves to induce ultrasound emission” and “can produce high-quality images and find tumours as tiny as 2 millimetres in diameter.” In addition to advancing the field of health care, technology designed by engineers is helping to improve the patient experience. Some advanced devices can help patients monitor their health from the comfort of their house. This is not only convenient, but it can save patients hundreds of dollars by not having to have these tests performed at the doctor’s office. This technology can take the form of wearable devices, mobile apps, and health-monitoring devices. Examples of such revolutionary technology include: Cue i.e a home diagnostics tool that lets patients test themselves for inflammation, vitamin D levels, fertility, influenza, or testosterone, Colorimetrix i.e an app that helps patients monitor glucose, evaluate protein, and measure pH concentration and alivecor i.e a portable heart monitor and compatible app that allows users to produce electrocardiograms from home using finger sensors. With the help of electrical engineering, patients and doctors alike can enjoy a better experience with their medical treatments. Although engineering may not appear to be a direct source for health-care innovation, the intersection of these two fields is helping to improve the lives of many people around the world.





# BLUETOOTH TECHNOLOGY



Bluetooth is a radio frequency specification for short range, point to point and point to multi point voice and data transfer. Bluetooth technology facilitates the replacement of cables normally used to connect one device to another by a short range radio link. With the help of blue tooth we can operate our keyboard and mouse without direct connection of CPU. Printers, fax machines, headphone, mouse, keyboard or any other digital devices can be part of Bluetooth system.

Bluetooth technology represents an opportunity for the industry to deliver wireless solutions that are ubiquitous across a broad range of devices. The technology of Bluetooth centers around a 9mm x 9mm microchip, which functions as a low cost and short range radio link. Bluetooth Technology provide a 10 meter personal bubble that support simultaneous transmission of both voice and data for multiple devices. Up to 8 devices can be connected in a piconet, and up to 10 piconets can exist within the 10 meter bubble.

Each piconet support up to 3 simultaneous full duplex voice devices. It's features includes the separation of the frequency band into hops.

This spread spectrum is used to hop from one channel to another, which adds a strong layer of security. When safety precautions are taken, this technology is regarded as being among the most secure wireless technologies. In order to thwart a simple attack, Bluetooth-enabled devices also often change radio frequencies

when coupled. The user can choose from a variety of options on these devices to limit the number of Bluetooth connections. A device's security setting for "trusting" it restricts connections to just that one particular device. We can restrict the activities your device is permitted to connect to while on a Bluetooth connection by utilising the service-level settings. Any wireless technology carries some level of safety risk. Different malicious attacks that make use of Bluetooth networking have been planned by hackers.

Bluetooth is a continually expanding technology. There are plans to add many new application profiles. With over 1800 companies working on Bluetooth, the future could not be brighter. With a strong special interest group behind Bluetooth, the standardization of the application profiles is almost assured.

# EXPLAINED: THE GLOBAL CHIP SHORTAGE

Nearly every digital electronic device today is powered by semiconductor chips. From cars to smartphones to supercomputers: these chips are extremely important in our lives.

Unfortunately, the demand for semiconductor chips has exceeded the supply. This has led to a global shortage that is affecting 170+ industries. As a result, we are currently seeing shortages and major increases in prices of products that require semiconductors. The average price of a new car increased 16% in less than two years. Graphics cards are being resold at upto 300% more than the retail price. Most of the low-end smartphones have remained out of stock for the past year. How did this happen?

The global chip crisis is due to a combination of different factors (described by many think-tanks as the “perfect storm”). The COVID-19 pandemic led to the shutting down of chip production facilities while rapidly increasing the demand for the same. The China–United States trade war has resulted in Chinese chip manufacturers being restricted from selling to American companies,

decreasing the production of consumer electronics. Since neon is used in the manufacturing of semiconductor chips and Ukraine produces about half of the global neon supply, the Russia-Ukraine war has only added fuel to an already existing shortage.

Experts have predicted this shortage to last for another year or two. Indian automobile companies including Tata Motors and Mahindra have lowered chip usage to reduce the waiting period (which is at 12 months for some vehicles). The Taiwan Semiconductor Manufacturing Company (commonly called TSMC, which alone accounts for 56% share in the global chip manufacturing market), Intel and AMD have announced plans to increase capacity at their manufacturing plants. The leading smartphone brands in India including Vivo and Mi have increased the prices of their most popular budget phones.

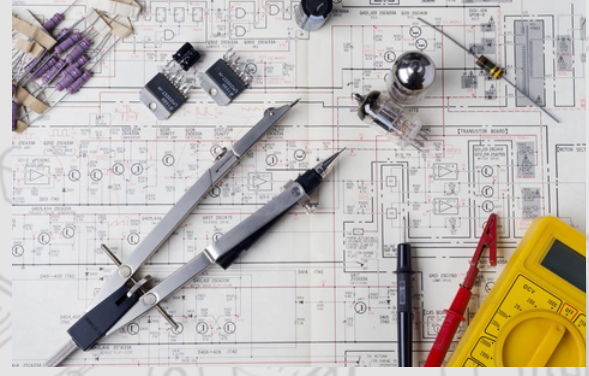


## বৈদ্যুতিক অভিযান্ত্রিক পাঠ্য ক্রমৰ বৰ্তমানৰ বিকাশ আৰু ভৱিষ্যতৰ সম্ভাৱনীয়তা

বৰ্তমানৰ ক্রমবিকাশ হৈ থকা মানৱ সমাজখনৰ আজিৰ যি এই অৱস্থান তাৰ বাবেই মূলত : হল বৰ্তমান যুগৰ অত্যাধুনিক প্ৰযুক্তি বিদ্যা । যাৰ অবিহনে আমি এটা খোজও আগুৱাই যোৱাৰ কল্পনাই কৰিব নোৱাৰো ।

প্ৰযুক্তি বুলি কলেই সাধাৰণতে আমাৰ মনলৈ আহে আমি নিমিষতেই বহু দূৰ-দূৰণিৰ মানুহৰ খবৰ মন গলেই লৈ পেলাব পৰা আমাৰ হাতৰ ম'বাইল তোলৈ, মন গলেই আমি গুচি যাব পাৰো উৰাজাহাজত উঠি বহু দূৰ দূৰনিলৈ, মন গলেই আমি কাৰোবাক চাই পেলাব পাৰো video call ত । শৈশৱৰ সকলো উৎসুকতাৰ কেন্দ্ৰ বিন্দু হ'ব পৰা জুনবাইতো প্ৰৰ্যন্ত আমি গৈ আহিব পাৰিছো বা আমি প্ৰ তাকেই কাৰ্যিক ভাবে নগলেও হাততে থকা ম'বাইল নামৰ সৰু যন্ত্ৰতোৰ দ্বাৰা পৃথিৱীৰ সকলো বস্তুৰে উপৰত কম বেছি পৰিমাণে আলোক পাত কৰিব পাৰিছো, এই প্ৰযুক্তিৰ দ্বাৰাই , একেবাৰে চমুকৈ কবলৈ গলে এইয়াই হল প্ৰযুক্তি, যি আগে মানুহৰ বাবে সপোনৰো আগোছৰ আছিল আজিকালি সেইবোৰ কাম আমাৰ বাবে ভাতৰ লগত পানী খোৱা খেল হৈ পৰিল ।

এই প্ৰযুক্তি সমূহৰ পৰা আমি সম্পূৰ্ণ ৰূপে লভাস্বিত হ'বলৈ হ'লে আমি ব্যৱহাৰ কৰা বৈদ্যুতিক সামগ্ৰী বা Gadget বোৰ ভালদৰে কাৰ্যক্ষম হ'ব আৰু কাৰ্যক্ষম হৈ থাকিবলৈ হ'লেই প্ৰয়োজন হ'ব বিদ্যুৎৰ । যি বিদ্যুতৰ উপৰত পৰীক্ষণ কৰিছিল প্ৰথমবাৰৰ বাবে ১৭০০ শতিকাত বেঞ্জামিন ফ্ৰেংলীনে আৰু তাৰ পিছৰে পৰা ক্রমবিরতন আৰু বিভিন্ন পৰীক্ষা নিৰীক্ষাৰ ফলত আমি ব্যৱহাৰ কৰি থকা বৰ্তমানৰ বিদ্যুতৰ অৱস্থা আমি দেখিবলৈ পাইছো। বিদ্যুৎ এক শক্তি, আমি জানো শক্তিক সৃষ্টি কৰিব নোৱাৰি আৰু ধবংসও কৰিব নোৱাৰি , আমি তাক এটা ৰূপৰ পৰা অন্য এক ৰূপলৈ ৰূপান্তৰহে কৰিব পাৰো। আচলতে বিদ্যুৎ উৎপন্ন



কৰিবলৈ বৃহৎ নদিবান্ধৰ লগতে বায়ুকল, তাপবিদ্যুৎ প্ৰকল্পৰ আদিৰ সহায় আমি লও , এই বিদ্যুৎ উৎপন্ন হোৱা ঠাইৰ পৰা বিদ্যুতক পৰিবাহী কৰি আমি আপোনাৰ বা মোৰ ঘৰে ঘৰে বিদ্যুৎ শক্তিতোক অনালৈকে এই দীঘলীয়া প্ৰক্ৰিয়াতোত বহু মানুহ জড়িত হৈ থাকে আৰু তাৰেই ভিতৰত অন্যতম হ'ল এজন বৈদ্যুতিক অভিযন্তা । আপোনাৰ ঘৰখন উজ্জ্বলাই ৰখা লাইটৰ বাল্বতোৰ পৰা আৰম্ভ কৰি আপোনাৰ মন মগজু শীতল কৰি পেলোৱা ফোনখনলৈকে, নিমিষতে আপোনাক প্ৰখৰ গৰমৰ অনুভৱ কৰেৱাৰ পৰা হিটাৰতোৰ পৰা আৰম্ভ কৰি আপোনাক নিমিষতে বৰফৰ দেশৰ অনুভৱ দিব পৰা ফ্ৰিজ আৰু AC টো লৈকে আপুনি পিন্ধি থকা কাপোৰযোৰ ধুই শুকুৱাই আপোনাৰ হাতত তুলি দিয়া লৈকে এজন বৈদ্যুতিক অভিযন্তাইহে আপোনাক প্ৰতি মূহূৰ্তত নেদেখাজন হৈ সহায় কৰি আহিছে । গতিকে আমি আমাৰ বৰ্তমানতো চাই অনাগত দিনত আৰু কিমান বেছি ইলেকট্ৰনিক Gadget বা বিদ্যুতৰ উপৰত নিৰ্ভৰশীল হৈ পৰিম সেই কথা আমি সহজে অনুমান কৰিব পাৰিছো। এই সকলোবোৰৰ উন্নতিৰ বাবে আমি বৈদ্যুতিক অভিযন্তা বা বৈদ্যুতিক অভিযান্ত্ৰিক পাঠ্যক্ৰমৰে বিকাশ বুলি ধৰি ল'ব পাৰো। বৰ্তমান সময়ত আন আন অভিযান্ত্ৰিক পাঠ্যক্ৰমৰ লগে লগে বৈদ্যুতিক অভিযান্ত্ৰিক পাঠ্যক্ৰমৰ গুৰুত্বও বহু বেছি পৰিমাণে বাঢ়ি আহিব ধৰিছে । এইটো অভিযান্ত্ৰিক পাঠ্যক্ৰমৰ শাখাও আন আন শাখাৰ দৰেই তাত্ত্বিক আৰু ব্যৱহাৰিক দিশত যথেষ্ট পৰিমাণে গুৰুত্ব প্ৰদান কৰি আহিছে।



আগৰ সময়সমূহত বিদ্যুৎৰ বিষয়ে কৰা অধ্যয়নক পদাৰ্থবিজ্ঞানৰহে এটি অংশ বুলি গণ্য কৰা হৈছিল। কিন্তু পিছলৈ Technische University of Darmstadt য়ে ১৮৮৩ চনত প্ৰথমবাৰৰ বাবে বৈদ্যুতিক অভিযান্ত্ৰিক পাঠ্যক্ৰমক এটা বিক্ৰী পাঠ্যক্ৰম হিচাপে স্বীকৃতি দিয়া হৈছিল। United States ত প্ৰথমবাৰৰ বাবে বৈদ্যুতিক বিভাগটোক অভিযান্ত্ৰিক পাঠ্যক্ৰম হিচাপে স্বীকৃতি দিছিল। Massachusetts Institute of Technology (MIT)য়ে যদিও প্ৰথম গ্ৰেজুৱেট হৈছিল ১৮৮৫ চনত Cornell University ৰ পৰা বিশ্বৰ প্ৰথম বৈদ্যুতিক অভিযন্তা বুলি মাইকেল ফেৰাডেক আমি জানো। বৰ্তমান বৈদ্যুতিক অভিযান্ত্ৰিক পাঠ্যক্ৰমক এক বহল পৰিসত ভাগ কৰিব পৰা হৈছে আৰু আন আন অভিযান্ত্ৰিক শাখাসমূহতো ইয়াৰ প্ৰয়োজনীয়তা আছে যেন - যান্ত্ৰিক অভিযান্ত্ৰিক, অসামৰিক অভিযান্ত্ৰিক আদি। ইয়াৰ উপৰিও মেকাট্ৰনিকছ

এটা অভিযান্ত্ৰিক পাঠ্যক্ৰমৰ শাখা যি বৈদ্যুতিক অভিযান্ত্ৰিকী আৰু যান্ত্ৰিক অভিযান্ত্ৰিক পাঠ্যক্ৰমৰ সংমিশ্ৰিত অধ্যয়ৰ সুবিধা আগবঢ়াইছে যাক আমি ইলেকট্ৰ'মেকানিকেল চিষ্টেম বুলি জানো। এক পৰিসংখ্যা অনুসৰি বৰ্তমান ভাৰতত প্ৰায় ৩৭৩৩০০ ছাত্ৰ-ছাত্ৰীয়ে প্ৰতি বছৰত বৈদ্যুতিক অভিযন্তা হিচাপে বিক্ৰী লাভ কৰে আৰু অনাগত দিনত এই স্নাতকৰ সংখ্যা আৰু বহু পৰিমাণে বৃদ্ধি হোৱাৰ আশা আছে।

এইবোৰৰ উপৰিও বৰ্তমান যিদৰে সমগ্ৰ পৃথিৱীখন প্ৰযুক্তিয়ে আৱৰি পেলাইছে আৰু আগুৱাই নিছে সেইয়া সুখৰ কথা যদিও অত্যাধিক প্ৰযুক্তিৰ ওপৰত নিৰ্ভৰ কৰিলে মানৱ জাতিৰ নিজস্বতা হেৰুৱাৰ সম্ভাৱনা আছে। অসতৰ্ক হৈ বৈদ্যুতিক আহিলাপাতি ব্যৱহাৰ কৰিলে বা বিজুলীৰ লগত খেলা কৰিলে হিতে বিপৰীত হোৱাৰ সম্ভাৱনা অধিক।

শ্ৰীকান্ত ঠাকুৰ  
তৃতীয় শান্মাষিক





# POEM

## জে.ই.চি : এক স্বপ্ন মঞ্চ

মেঘৰ কলীয়া ডাঁৱৰ আঁতৰাই  
জ্ঞানৰ বস্ত্ৰিৰে পৃথিৱী আলোড়িত কৰাৰ  
এবুকু হেঁপাহ পুহি ৰখা  
শত সহস্ৰ জ্ঞান পিপাসুৰ  
এক স্বপ্নৰ মঞ্চ - গড়মূৰ ৰ'ডৰ জে.ই.চি  
যাৰ নামতেই আছে এক অনামী শিহৰণ  
জেইচি ;

তোমাৰ বুকুতেই যেন বিচাৰি পাওঁ  
জীৱনৰ সকলো উৎসাহ উদ্দীপনা  
আৰু !!

আৰু আমাক উদ্ভাসিত কৰি তোলা  
তোমাৰ গৌৰৱময় স্মৃতি ।

মোৰ প্ৰাণৰো প্ৰাণৰ, গানৰো গানৰ - জে.ই.চি  
তোমাৰ প্ৰতিটো সুবাস যেন সামৰি লওঁ  
অন্তৰৰ নিভাজ কোণত ।

জীৱনৰ শেষ উশাহ পৰ্যন্ত মোৰ যেন  
এটাই পৰিচয় হওঁক

মই JECian, মই Arcadian

য'ত অহঁনিশে উৰি ফুৰে সফলতাৰ ডেউকাৰে  
আকাশ চুব খোজা এজাক ৰঙচঙীয়া পখিলা।

হে জে.ই.চি !

উজ্জ্বল সৌজ্জল কহিনুৰ পিন্ধা প্ৰাণৰ প্ৰিয়তমা  
এটি পৃষ্ঠাৰ নষ্টালজিয়া হৈ যিদিনা উভতিম এৰি থৈ

তোমাৰ দুহাতত তুলি থৈ যাম -

একাঁজলী আজাৰ ফুলীয়া চেনেহৰ মালা  
ৰাখিবানে বাক যুগমীয়াকৈ ?

তবচ্চুম নাচৰিন  
তৃতীয় ষান্মাষিক

The background of the entire page is a repeating pattern of various electrical symbols and components, including light bulbs, power outlets, extension cords, and multimeters, rendered in a light gray, hand-drawn style.

## **SOCIETY**

**Welcome to society,  
We hope you enjoy your stay;  
And please feel free to be yourself;  
As long as it is in the right way;**

**Make sure you love your body,  
Not too much or we will tear you down;  
We will bully you for smiling,  
And then wonder why you frown;**

**We will tell you that you're worthless,  
That you should not make a sound;  
And then cry with all the others,  
As you're buried in the ground;**

**You can fall in love with anyone,  
As long as its who we choose;  
And we will let you have your opinions,  
But please shape them to our views.**

**Welcome to society  
We promise that we won't deceive,  
And one more rule now that you're here,  
There is no way you can leave.**

**RIMI DEB  
3rd SEMESTER**