# Department of Electrical And Electronics Engineering

VIDYUTH
-Explore-Create-Inspire-

## Technical Magazine

## JUL - DEC 2023

## EDITORIAL BOARD



## INSTITUTION

**Vision of the Institute:**

To be a premier center of learning in Engineering and Management education that evolves the youth into dynamic professionals with a social commitment

**Mission of the Institute:**

M1: To provide quality teaching- learning practices in engineering and management education by imparting core instruction and state-of-the-art infrastructure.

M2: To engage the faculty and students in acquiring competency in emerging technologies and research activities through Industry Institute Interaction.

M3: To foster social commitment in learners by incorporating leadership skills and ethical values through value-based education

## DEPARTMENT

**Vision of the Department:**

"To be recognized for producing meritorious electrical engineers with research proficiency and social commitment".

**Mission of the Department:**

M1: Impart quality education with practice-based learning in producing electrical engineers with ethical values.

M2: Encourage the faculty and students to acquire mastery in cutting edge technologies.

M3: Implement research activities with social commitment.

## Program Educational Objectives (PEOs)

PEO-I : Acquire a profound knowledge for a successful career in electrical engineering and allied fields

PEO-II :Pursue higher education and involve in research activities of electrical and electronics engineering.

PEO-III : Exhibit intellectual skills ethically and pursue life-long learning with social commitment.

EEE PBRVITS | DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

## Program Outcomes (POs)

1. Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

2. Problem analysis: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

3. Design/development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

4. Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

5. Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

6. The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

7. Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

8. Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

9. Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

10. Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

11. Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

12. Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

## Program Specific Outcomes (PSOs)

PSO-1 : Analyze industrial electrical challenges by applying knowledge of fundamental electrical circuits, electronics and drives

PSO-2 : Apply standard practices in electrical power and control systems with safety and societal considerations.

# DEPARTMENT PROFILE

The Department of Electrical and Electronics Engineering was established in 1998 with the approval of the All India Council for Technical Education (AICTE). The Department of Electrical and Electronics Engineering (EEE) is one of the oldest department in the institution, spanning 25 years of existence, and offers the undergraduate program B.Tech-EEE (and one post-graduate program, Power Electronics). The department has qualified and experienced faculty and excellent infrastructural facilities. It is well equipped with laboratories, audio-visual facilities, and software tools such as Multisim, MATLAB, and Pspice.

We also take up the social responsibility of inculcating awareness about energy conservation by promoting programmes about the same. Collaboration with industries for timely amendments of curriculum and laboratories is another credential of the department. The long-term goal of the department is to develop a centre for research and development activities in the thrust areas of solar and wind energy. The main objective of the department is to provide a better solution for industrial problems and to carry out academic and sponsored research projects.

The department is committed to providing students with exposure to state-of the art technologies by signing a Memorandum of Understanding (MoU) with reputed companies. The students exhibit their co-curricular and extra-curricular skills through the activities of the EEE student association and other student exhibition platforms. The Department of Electrical Engineering is committed to excelling in Electrical and Electronics Engineering through education and research with well-qualified and experienced faculty and technical staff members.

## PROFESSOR DESK

Welcome to the Department of Electrical and Electronics Engineering, PBR VITS, Kavali, Andhra Pradesh. As a well-known fact, we cannot imagine the world without electricity. The Department of Electrical and Electronics Engineering is a center of preeminence where we nurture young talents by imparting technical training to them so that they can take up the challenges of real world. The Department of Electrical and Electronics Engineering was established in the year 1998 with an objective to develop professionals through quality education with an intake of 60 students.

The B.Tech and M.Tech programs are designed to achieve a balance between depth of knowledge acquired through specialization and breadth of knowledge gained through exploration. The courses offered by the department provide a comprehensive foundation in the core topics of EEE coupled with an area of specialization relevant to emerging engineering challenges.

The faculty in the department is a rich blend of personnel with industrial and professional experience. The dedicated staff members have sound knowledge in emerging areas like power systems, power electronics, and control engineering, etc. The breadth and depth of the research interests of the academic staff ensures a high standard of lecture courses and provides excellent opportunities for challenging and stimulating final year projects. All faculties supplement their delivery using videos, animations overhead projectors. The faculty keeps up with the latest technologies by publishing in reputed journals and presenting at various national and international conferences.

The department is active in organizing the various workshops and seminars for the growth and development of faculty and students' research knowledge further. Our department students are also highly encouraged to implement their innovative research ideas with the help of the expert faculty members and the available standard lab facilities in the department.

"Education can be a powerful weapon to change the world"

**Dr. V. MadhuSudhana Reddy**
**Professor & HOD, EEE.**

## HOW AI AND AUTOMATION ARE CHANGING THE NATURE OF WORK:

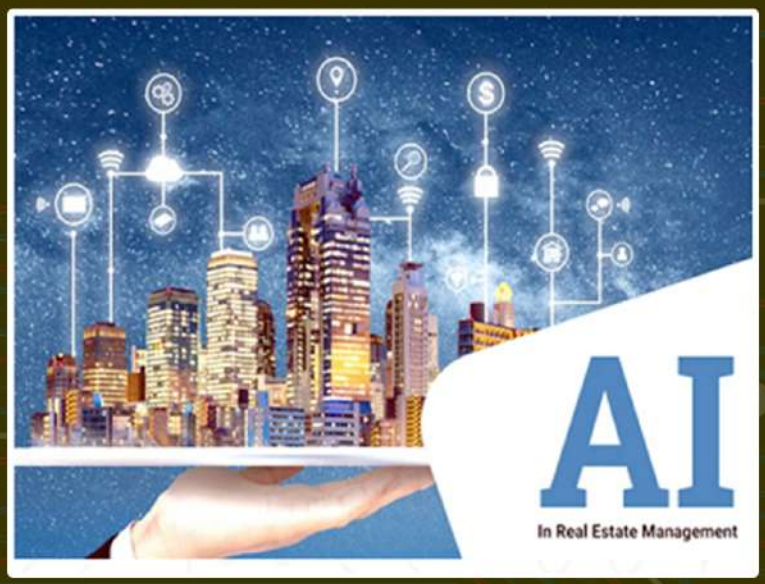
AI, Automation, digital platforms, and other innovations are changing the essential nature of work. AI and automation are transforming how businesses communicate with their consumers, and execute their internal processes, reinventing themselves in the way they operate. Understanding these shifts can help innovators, business leaders, and professionals march forward. This article looks at the top industries impacted by AI and how it's changing the nature of the workforce these industries require. Manufacturing: Artificial intelligence and automation are the keys to future growth across industries, and the manufacturing sector is no exception to it. Manufacturers are using AI-backed analytics and data to reduce unplanned downtime, enhance efficiency, product quality, and the safety of employees. The PwC research also suggests that around 45% of total economic gains by 2030 will be from product enhancements, stimulating consumer demand. AI can significantly enhance the quality and scale of work in the manufacturing industry by improving the capabilities of every manufacturing business function. Predictive Maintenance: AI helps in enhancing asset utilization, and productivity by predicting unplanned machine and equipment breakdown Production Enhancement: With the help of AI engines, businesses can successfully identify underlying causes of yield losses and locate the detractors Quality Enhancement: AI technologies need specialist skills and the automation that manufacturers have already adopted demand skilled workforce. For instance, Cobots, collaborative robots assist humans with complicated tasks. These technologies require humans to program them to perform complex jobs. The adoption of AI in the manufacturing industry should be seen as a positive development, and fruitful results can be achieved through training and reskilling the existing workforce. AI and automation will allow humans to focus on activities that generate more value for their roles and the business.

Retail: From the advent of Flippy, the robot hamburger chef, to Bingo Box, an entirely unmanned convenience store in China, and Amazon Go, the cashier-less supermarket, the use of robots and AI in the retail sector is growing at a rapid pace. According to IBM, 85% of retail and 79% of consumer products companies aim to use intelligent automation for supply chain planning by 2021. For example, the famous footwear, apparel, and equipment brand, Nike Inc., has designed a system where customers can create their designs and shoes and go out of the store wearing them. This new automated system uses augmented reality, object tracking and projection systems, and voice activation to completely transform the customer's experience with the brand and its products. Automation and AI are set to redesign the entire retail industry model and the broader value chain. This transition will result in the emergence of organizations with fewer layers and a better-skilled, and trustedWorkforce backed by real-time data and analytics. With a better-rounded team and newer roles that are a hybrid between technology and business, organizations will have a much faster decision-making process.

Real Estate: AI has already entered the real estate industry and is affecting a massive change to this $480 billion industry—from impacting the home search experience to predicting the marketing trends in the real-estate sector.

Smart Home Search Portals: AI-enabled home search portals showcase recommended properties that meet customer preferences, personality traits, and requirements. These portals will support fewer, higher quality properties that suit the needs of the customer better. Chatbots are helping resolve simple questions to help prospective customers find their next home. With AI and Machine Learning, Chatbots are becoming smarter by the day and will soon be able to answer complex search queries through both text and voice, proficiently.

Now you can efficiently focus on contracts, answer telephones, and build customer relationships while AI automates much of the manual work.




Enhancing the Buying Process: AI can predict property market values by combining CRM and market place data. Robots may soon assist agents in offering a unique buying experience to the customers. Zen place, a real-estate Startup, is already offering AI based touring to its customers. AI is slated to play a vital role in enhancing the productivity of agents and offering customers with a user experience that is designed just for them.

**A.BHAKTHA VASTALA**
**Lecturer, Department of EEE**

## CHINA'S BYD UNVEILS A NEW BATTERY TECHNOLOGY THAT CAN CHARGE ELECTRIC VEHICLES IN JUST FIVE MINUTES, SIGNIFICANTLY REDUCING THE CHARGING TIME FOR ELECTRIC CARS.

Batteries capable of fully charging in five minutes have been produced in a factory for the first time, marking a significant step towards electric cars becoming as fast to charge as filling up petrol or diesel vehicles. The batteries can be fully charged in five minutes but this would require much higher powered chargers than used today. Using available charging infrastructure, Store Dot is aiming to deliver 100 miles of charge to a car battery in five minutes in 2025. "The number one barrier to the adoption of electric vehicles is no longer cost, it is range anxiety," said Doron Myers Dorf, CEO of Store Dot. "You're either afraid that you're going to get stuck on the highway or you're going to need to sit in a charging station for two hours But if the experience of the driver is exactly like fuelling [a petrol car], this whole anxiety goes away." "A five-minute charging lithium-ion battery was considered to be impossible," he said. "But we are not releasing a lab prototype, we are releasing engineering samples from a mass production line.

This demonstrates it is feasible and it's commercially ready." Existing Li-ion batteries use graphite as one electrode, into which the lithium ions are pushed to store charge. But when these are rapidly charged, the ions get congested and can turn into metal and short circuit the battery. The new "sub cooled flow boiling" technique results in greatly improved heat transfer effectiveness compared to other approaches and could be used to control the temperatures of future systems in space. This technology can also have applications on Earth: It could make owning an electric car more appealing, the researchers said.

**PARAUSU PRADEEP**
**Roll No.21731A0239**

# TESLA INTRODUCES ITS LATEST ELECTRIC VEHICLE, THE MODEL Y, IN CHINA, WHERE IT IS EXPECTED TO BE A POPULAR CHOICE AMONG CONSUMERS

The Tesla Model Y is a battery electric compact crossover manufactured by Tesla, Inc. Unveiled in March 2019, it started production at its Fremont plant in January 2020, and started deliveries on March 13, 2020. The Model Y is based on the Model 3 sedan platform. It shares an estimated 75 percent of its parts with the Tesla Model 3, which includes a similar interior and exterior design and electric power train. The Model Y fills a smaller and less expensive segment than the midsized Tesla Model X. Like the Model X, the Model Y offers optional third-row seats for a seven-passenger seating capacity. On January 1, 2021, Tesla started selling the Model Y in China, and it sold out its planned production (an unknown quantity) for Q1 2021 within 6 days. On January 7, 2021, Tesla released the Standard Range Rear Wheel Drive Model Y as well as the optional 7- seat, third-row seating configuration. On July 25, 2021, CEO Elon Musk revealed that Tesla was planning to release an updated design for the Model Y by the end of 2021.

In addition, Tesla planned to implement their new structural battery pack to improve range. These new cars would be manufactured by the two new Tesla production facilities in Austin, Texas and Berlin, Germany. If Tesla was not able to roll out the new 4680 battery cells by the end of 2021, they would use the standard battery cells until the 4680's are ready

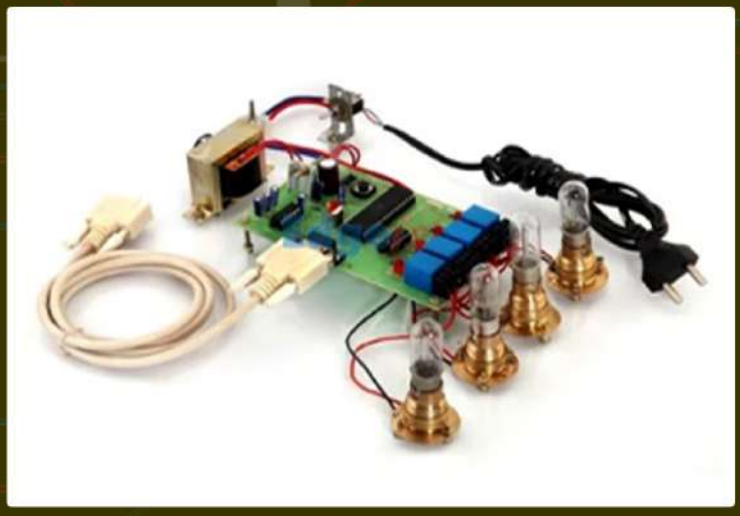
**ADENNAGARI CHAITANYA**
**Roll No: 20731A0201**

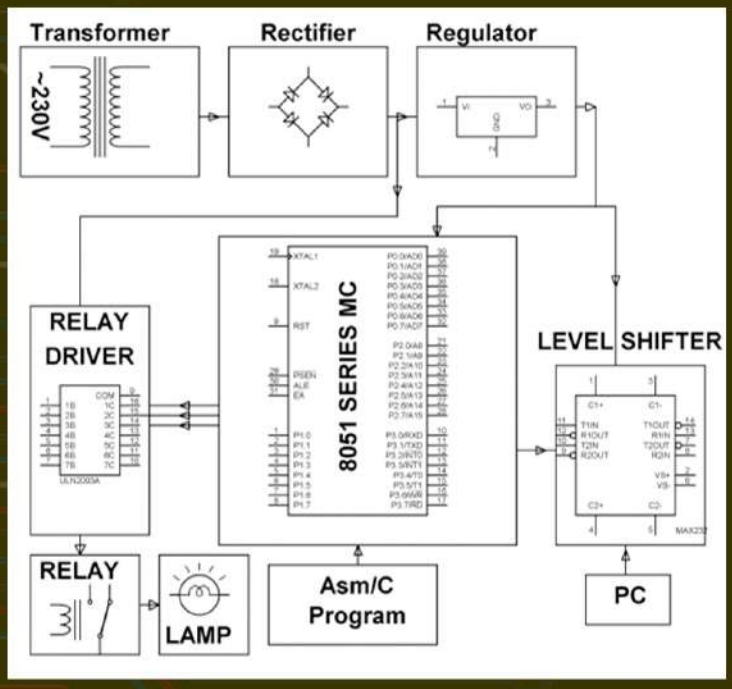
# PC BASED ELECTRICAL LOAD CONTROL

PC Based Electrical Load Control: The aim of this project is to control the electrical appliances through a personal computer (PC). For example, theatre lighting can be centrally controlled form the PC for better stage management. Presently, they are manually managed which makes it difficult to coordinate the lighting with the respective scene.With this system, one can control the electrical appliances ON/OFF by just being seated at one place using a PC.

This system is integrated with the electrical loads and also connected to the PC where centralized control takes place. It uses an RS-232 protocol from the microcontroller to communicate with the PC. To turn on/off the appliances, we use Hyper Terminal on PC. Once the connection is established with the PC, then the system starts working. The microcontroller used in this project belongs to 8051 family. This project can be further enhanced by implementing a GUI based control panel on the PC with appropriate embedded software. The intensity control can also be incorporated using power electronics devices.

Electrical appliances can be controlled through a PC interfaced to a microcontroller. This interface is done through a level shifter IC. The loads are then controlled through the relays duly interfaced to the relay driver which in turn is connected to the microcontroller. Electrical appliances can be controlled through a PC interfaced to a microcontroller. This interface is done through a level shifter IC. The loads are then controlled through the relays duly interfaced to the relay driver which in turn is connected to the microcontroller.






**Y.SAI SANTHAN**
**Roll No: 21735A0216**

# ELECTRICAL VEHICLE DEVELOPMENT IN 2023

In the second half of 2023, there were several significant developments in the field of electric vehicles (EVs), including advancements in battery technology, charging infrastructure, and the introduction of new models by major automakers. Here are some of the key highlights:

1. Battery Technology Advancements: In the second half of 2019, several companies announced advancements in battery technology that could help make electric vehicles more practical and affordable. For example, Tesla announced plans to introduce a new "million-mile" battery that could last for more than a million miles of driving before needing to be replaced. This could significantly reduce the total cost of ownership for electric vehicles, making them more competitive with traditional gas-powered cars. Other companies, such as Solid Power and Quantum Scape, announced progress in developing solid-state batteries that offer higher energy density and faster charging times than conventional lithium-ion batteries.

2. Charging Infrastructure: As the popularity of electric vehicles continues to grow, the need for charging infrastructure has become increasingly important. In the second half of 2019, several companies and governments announced plans to invest in charging infrastructure to support the transition to electric vehicles. For example, Electrify America announced plans to install over 2,000 high-speed charging stations across the United States by the end of 2025. Similarly, the European Union announced plans to invest €800 million in charging infrastructure as part of its goal to become carbon neutral by 2050.

3. New Electric Vehicle Models: In the second half of 2023, several major automakers announced new electric vehicle models or updates to existing models. For example, Audi introduced its first all-electric SUV, the etron, which offers a range of over 200 miles on a single charge. Similarly, Porsche introduced the Taycan, a high performance electric sports car that offers a range of up to 280 miles. Other companies, such as Ford and Volkswagen, announced plans to introduce new electric models in the coming years.

4. Government Incentives: In many countries, governments offer incentives to encourage consumers to switch to electric vehicles. In the second half of 2019, several governments announced new or expanded incentives for electric vehicle buyers. For example, the United Kingdom announced plans to increase its electric vehicle grant from £3,500 to £4,500, while the Canadian government announced a new incentive program that offers up to $5,000 off the purchase of a new electric vehicle.

5. Autonomous Driving: While still in the development stage, autonomous driving technology could have a significant impact on the electric vehicle market in the coming years. In the second half of 2019, several companies made progress in developing autonomous driving technology for electric vehicles. For example, Tesla announced plans to launch its fully autonomous driving system in 2020, while Waymo (a subsidiary of Alphabet) announced plans to launch a commercial autonomous ride-hailing service in Arizona using electric vehicles.

**SK.ANWAR BASHA**
**Roll No: 21735A0214**

# RECYCLING OLD BATTERIES INTO SOLAR CELLS

This could be a classic win-win solution: A system proposed by researchers at MIT recycles materials from discarded car batteries — a potential source of lead pollution — into new, long-lasting solar panels that provide emissions-free power. The system is described in a paper in the journal Energy and Environmental Science, coauthored by Professors Angela M. Belcher and Paula T. Hammond, graduate student PoYen Chen, and three others. It is based on a recent development in solar cells that makes use of a compound called perovskite — specifically, organ lead halide perovskite — a technology that has rapidly progressed from initial experiments to a point where its efficiency is nearly competitive with that of other types of solar cells. “It went from initial demonstrations to good efficiency in less than two years,” says Belcher, the W.M. Keck Professor of Energy at MIT.

Already, perovskite-based photovoltaic cells have achieved power-conversion efficiency of more than 19 percent, which is close to that of many commercial silicon based solar cells. Initial descriptions of the perovskite technology identified its use of lead, whose production from raw ores can produce toxic residues, as a drawback. But by using recycled lead from old car batteries, the manufacturing process can instead be used to divert toxic material from landfills and reuse it in photovoltaic panels that could go on producing power for decades. Amazingly, because the perovskite photovoltaic material takes the form of a thin film just half a micrometer thick, the team's analysis shows that the lead from a single car battery could produce enough solar panels to provide power for 30 households. As an added advantage, the production of perovskite solar cells is a relatively simple and benign process. "It has the advantage of being a low-temperature process, and the number of steps is reduced" compared with the manufacture of conventional solar cells, Belcher says. Those factors will help to make it "easy to get to large scale cheaply," Chen adds.

**D.LAKSHMI PRIYANKA**
**Roll No: 20731A0208**

## SUPER CAPACITOR BATTERY CAN CHARGE YOUR PHONE IN SECONDS

You may soon have to say goodbye to the dying battery woes. Yes, the long hours that your smart phone takes to charge may soon become a thing of the past, as scientists, including one of Indian-origin, have developed a new process to make electronic devices charge in seconds. The researchers at University of Central Florida (UCF) in the US have developed a process to create flexible super capacitors that have more energy storage capacity and can be recharged more than 30,000 times without beginning to degrade. "If they were to replace the batteries with these super capacitors, you could charge your mobile phone in a few seconds and you wouldn't need to charge it again for over a week," said Nitin Choudhary, a postdoctoral associate at UCF. These super capacitors that are still proof-of-concept could be used in phones and other electronic gadgets, and electric vehicles, said the study published in journal ACS Nano.


Anyone with a smart phone knows the problem. After 18 months or so, it holds a charge for less and less time as the battery begins to degrade. Scientists have been studying the use of nano materials to improve super capacitors that could enhance or even replace batteries in electronic devices. It is a stubborn problem, because a super capacitor that held as much energy as a lithium-ion battery would have to be much, much larger

**MUTTEMBAKA.VINEELA**
**Roll No: 20731A0217**

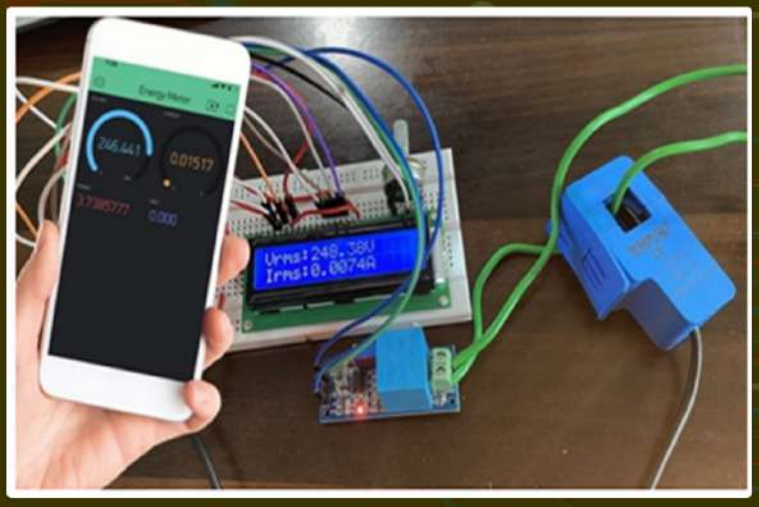
## SMART ELECTRICAL METER

A majority of the large investor-owned utilities in North America are now either fully deployed or in the implementation or planning phases of large-scale projects, and a second wave of deployments is soon to begin for the early adopters. The penetration of smart meters is currently about 60 percent and is expected to increase to 81 percent in 2024, primarily driven by large investor-owned utility projects in the US as the relatively mature market in Canada is expected to see moderate growth. Asia-Pacific constitutes the world's largest and fastest growing meter market with an estimated installed base of over 1.3 billion electricity and gas metering devices.

Annual demand for electricity meters in the region is in the range of 110-200 million units, with China accounting for around 70 percent of the volume. The Asia-Pacific is highly fragmented in terms of the progress of smart metering deployments, and the regional markets can be divided into three general groups. Smart meter deployments have been underway across the globe for many years with many millions of devices already deployed. Substantial and sustained further growth is expected as utility companies seek more accurate, granular and timely data to operate their businesses more efficiently.

By definition, a smart meter must be connected so it can transmit data and therefore the connectivity is a mission critical requirement. With a wide range of options available, the connectivity decision is increasingly based on the cost, security, coverage, power usage and the potential throughput of the connectivity.

Each of these can cause deployments to succeed or fail and therefore must be carefully balanced against each other to create an optimal solution. The latest whitepaper from Quectel, "Why cellular connectivity provides the robust, secure foundation for new revenues in smart metering" discusses the challenges faced by an industry trying to globalize within a fragmented market, as well as the importance of the right connectivity in the deployment of smart meters. Cellular low power wide area (LPWA) networks have a series of advantages to bring to smart meter deployments, and this white paper looks at these advantages and examines: 1. The regions driving AMI growth 2. The challenging deployment landscape

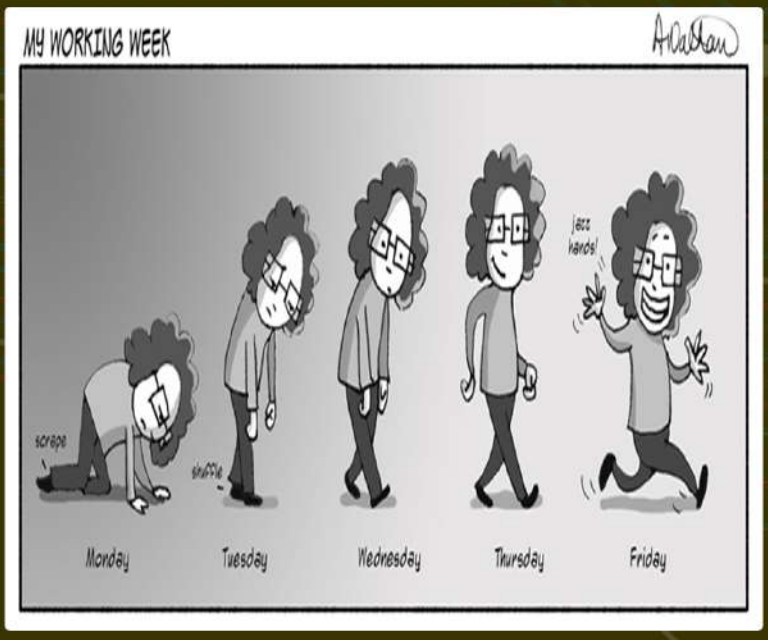



The third group consists of markets finding themselves in the early phases of smart meter deployments - Australia and India. In this project, we will learn how to make our own IoT Based Electricity Energy Meter using ESP32 & monitor data on the Blynk Application. Earlier we built GSM Prepaid Energy Meter. With the current technology, you need to go to the meter reading room and take down readings. Thus monitoring and keeping track records of your electricity consumption is a tedious task. To automate this, we can use the Internet of Things. The Internet of Things saves time and money by automating remote data collection. Smart Energy Meter has received quite a lot of acclaim across the globe in recent years. So, why not to build our own IoT Based.

**Nallu Mukesh**
**Roll No: 2373A02L07**

## WHY WEEKENDS SHOULD BE LONGER

First of all, why is it very unfair? practical speaking, weekdays is much longer than weekends. Students are really bored at school especially those students who haven't any plans on their lives. students prefer to hang out with friends than going to school. what are the factors affecting students in having a longer weekdays and shorter weekends?




#1: tiredness
In five days of studying and two days of doing homework, students tend to lessen their sleep and may cause tiredness. Tiredness means feeling exhausted, even though you're sleeping well. Tiredness is a normal part of life but sometimes tiredness can be severe or go on for a long time. Tiredness may be due to a wide range of physical illnesses (e.g. anemia, diabetes, heart failure, etc.).

#2: Under time pressure
I think most of the students would agree to this. do teachers really think that we are given enough time to finish our numerous homework? i think teachers are students before, then why they didn't realize that students are not always given enough time to do our tasks? they always say, "its about time management." this causes me stress. i would like to say, "it's not the teachers, its just all of the work that they make us do."

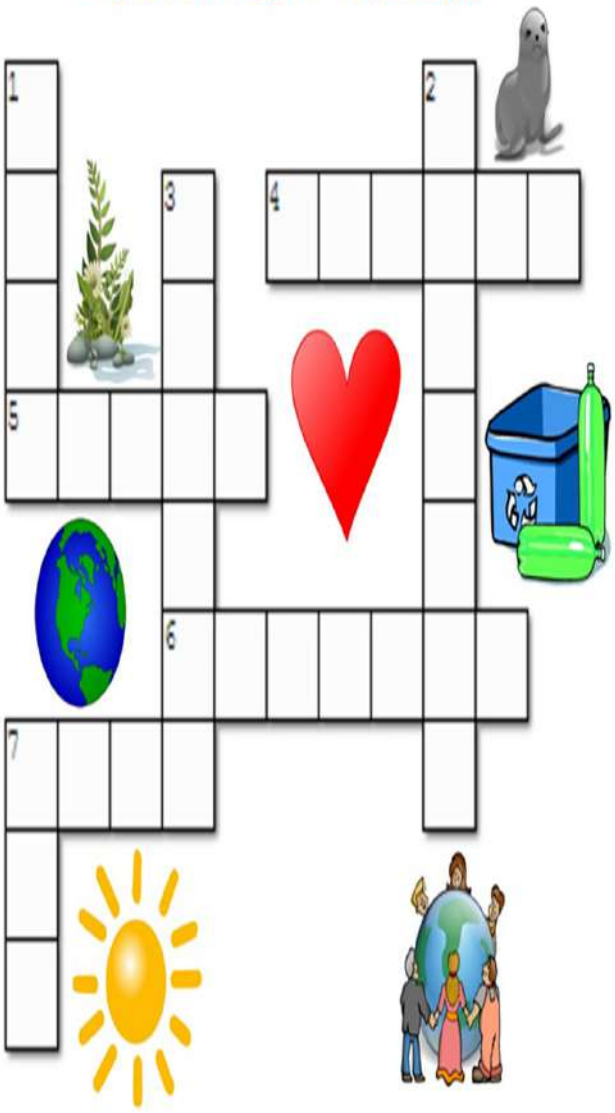
#3: Family Bonding
In my previous blog, i also mention this. everyday, students spend most of the time going to school, studying, doing homework, etc. how about time for family? Family values are political and social beliefs that regard the nuclear family as the essential unit of society Other family values stress the importance of extended family, the high value of education and 'respectable marriage'. most of the family doesn't pay attention to this and this causes communication gap. This is being the root of family problem.

#4: For our own interests
I can somehow agree with "wendy" (written by milton valdez and edwin cohen). we can't always learn through books, handouts, newspapers, periodicals, etc. Students NEEDED TIME TO PURSUE THEIR OWN INTERESTS NOT ONLY STUDYING. learning is not always in schools, we need to be exposed. we need to be familiar in such things we need to know.

i want an equality between weekdays and weekends. Maybe 4 weekdays and 3 weekends are enough for us to study, work, rest, etc. Maybe someday calendar will change

**Ms. K. Swetha**
**Assistant Professor**
**Department of EEE, PBR VITS**

# Earth Day Crossword Puzzle



**Across**

4. We have flowers, fruits, vegetables and other ____ in our garden.
5. We live on planet ___.
6. Reduce, Reuse, ____.
7. Together we can ___ the Earth.

**Down**

1. We need to ___ and take care of the Earth.
2. Dogs and cats are types of ____.
3. Plants, trees and birds are a part of ____.
7. The __ is so bright I have to wear dark glasses.

Words: animals sun plants Earth love nature save recycle

CHIRUTANURU SINDHU
18731A0207

## TECHNICAL QUIZ

1. Who is the Father of AC Distribution?
a) Nicola Tesla b) Thomas Edison
c) Sir Adam Beck d) Andres Carvello

2. Who is the Father of DC Distribution?
a) Nicola Tesla b) Thomas Edison
c) Sir Adam Beck d) Andres Carvello

3. Who Coined the term Smart Grid?
a) Nicola Tesla b) Thomas Edison
c) Sir Adam Beck d) Andres E. Carvello

4. What is the Structure of Electrical Power Grid Unit
a) Horizontal b) Vertical
c) Parabolic d) Inclined

5. What is the Power Flow Direction in Electrical Power Grid?
a) Generation to Customers
b) Customers to Generation
c) Both Directions sometimes
d) none of the above

6. What is AMI?
a) Automated Metering Instrument
b) Alternate Metering Instrument
c) Advanced Metering Instrument
d) Advanced Metering Infrastructure

7. The ability of two or more systems or Components to exchange information called.
a) Interoperability
b) Self-Healing
c) Demand response
d) Distributed Generation

8.What is the Transmission Voltage of Raichur- Solapur Transmission Line?
a) 760KV b) 765KV
c) 755KV d) 785KV

9. When did achieved One Nation – One Grid- One Frequency in India
a) 31 DEC 2011
b) 31 DEC 2015
c) 31 DEC 2013
d) 31 DEC 2014

10.What is the Energy Consumption Range for Domestic Users.
a) <20KW
b) > 20KW
c) 20 – 200 KW
d ) > 200KW

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