NEWS
LETTER

Counselling Code : VBIT

VIGNANA BHARATHI Institute of Technology

(A UGC Autonomous Institution, Approved by AICTE, Accredited by NBA & NAAC-A Grade, Affiliated to JNTUH)

DEPARTMENT OF
ELECTRICAL AND ELECTRONICS ENGINEERING PRESENTS

VIDYUT VIDHYA

ENERGIZE, ELECTRIFY, EXCEL

VOLUME 1 | ISSUE 1

2024

www.vbithyd.ac.in

CONTEXT

ABOUT INSTITUTE

VBIT, Sponsored by Swami Vivekananda Educational Trust (SVET) is the place where opportunities are provided for students to realize their ambitions, where new ideas are born, where innovative projects materialize, and where students excel in learning. Founded in 2004 by highly qualified people, Vignana Bharathi Institute of Technology emerged as a hub for engineering excellence. At VBIT, students will discover engineering in a different light. Students will experience an engineering education that is on par with the industry requirement. The institute is recognised as one of the Top Engineering Colleges in Telengana with NAAC 'A' Grade and NBA Accreditiation.

ACADEMIC LEADERS

Dr. N. Goutham Rao
Chairman VBIT

Dr. N. Goutham Rao, a highly accomplished sociologist, excels in academia and project management, bridging tradition with modernity while remaining accessible to diverse student and faculty populations..

Dr. G. Manohar Reddy
Secretary VBIT

Dr. G. Manohar Reddy, originating from a Nalgonda village, injects youthful energy into the Management Committee. With a stellar academic journey, he actively engages in teaching Chemistry.

Dr. P. V. S. Srinivas
Professor & Principal

Dr. P. V. S. Srinivas, an accomplished academic and administrator, serves as Principal and Professor in Computer Science Engineering. He holds a Ph.D., M.Tech, and AMIE with extensive experience.

VISION OF DEPARTMENT

To emerge as centre of excellence in Electrical and Electronics Engineering to meet the industry and societal needs

MISSION OF DEPARTMENT

Impart high quality education in Electrical and Electronics Engineering through effective teaching learning process and facilities. Develop necessary skills for professionalism, career choices and lifelong learning to succeed in core and multidisciplinary fields.

Provide ambience for innovative research and societal needs by collaborations.

ACKNOWLEDGEMENT

We express our sincere gratitude to our esteemed Chief Patrons Dr. N. Goutham Rao, Chairman-VBIT and Dr.G.Manohar Reddy, Secretary-VBIT, for their immense support and guidance.

We would like to acknowledge our Patrons Dr. P.V.S.Srinivas, Principal-VBIT, Dr.Y.V.S.S.S.V.Prasada Rao, Director-VBIT and Dr.G.Amarendar Rao, Director of Academic Audit & PG Studies, for their invaluable contribution and encouragement throughout the development of this Newsletter.

We extend our acknowledgement to our Convener, Dr.K.Neelima, Head of Department-EEE and Mr.V.Jeetender, Assistant Professor & Incharge, for their magnificent leadership and dedication which have been pivotal in guiding this project.

Finally, we extend our sincere gratitude to our team for their dedicated supervision and steadfast assistance in managing the diverse elements of Newsletter production.

We deeply appreciate all our readers for thoroughly exploring every page.

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

VISION

To emerge as centre of excellence in Electrical and Electronics Engineering to meet the industry and societal needs.

MISSION

M-1: Impart high quality education in Electrical and Electronics Engineering through effective teaching learning process and facilities.

M-2: Develop necessary skills for professionalism, career choices and lifelong learning to succeed in core and multidisciplinary fields.

M-3: Provide ambience for innovative research and societal needs by collaborations.

Program Educational Objectives (PEOs)

PEO-01: Domain Knowledge: Synthesize mathematics, science, engineering fundamentals, laboratory and attain practical experience to formulate and solve engineering problems in Electrical engineering domains by using appropriate tools and technologies.

PEO-02: Professional Employment: Contribute towards the growth of the industry, shine in government, entrepreneurship and R&D establishments.

PEO-03: Higher Degree: Succeed in the pursuit of higher degree in Electrical engineering or multidisciplinary fields by applying mathematics, science, and engineering concepts.

PEO-04: Engineering Citizenship: Practice professional and ethical attitude, effective communication skills and work in multidisciplinary teams to resolve engineering issues of social relevance.

PEO-05: Lifelong Learning: Pursue lifelong learning to expand technical and professional skills to become expert in chosen fields.

Program Specific Outcomes (PSOs)

PSO-01: Design, analyze and solve problems in the field of Electrical & Electronics Engineering by applying knowledge acquired from Electrical Power Systems, Electrical Machines, Control Systems, Power Electronics and Field theory.

PSO-02: Apply multidisciplinary concepts with emerging technologies to sustain with the dynamic industry challenges.

PSO-03: Excel in current and future technological advances for active contribution in the field of Electrical and Electronics Engineering for professional career progression.

PSO-04: Develop interpersonal skills that are in line with the industry requirements and societal needs.

Program Outcomes (POs)

Engineering graduates will be able to:

PO-01: Engineering Knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

PO-02: 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.

PO-03: 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 cultural, societal, and environmental considerations.

PO-04: 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.

PO-05: 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.

PO-06: 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.

PO-07: 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.

PO-08: Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO-09: Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

PO-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.

PO-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.

PO-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.

ABOUT DEPARTMENT

The Electrical and Electronics Engineering department at Vignana Bharathi Institute of Technology. Harnessing electrical energy poses a significant challenge for electrical engineers. The dynamic EEE department endeavors to inspire budding Electrical Engineers by instilling the notion of constructing Generating Stations, Transmission Lines, and Distribution Systems at cost-effective rates. Furthermore, it emphasizes the design, testing, and supervision of manufacturing processes for Electrical and Electronic equipment employed in various domains including electrical utilities, buildings, automobiles, aircraft, radar, navigation systems, and broadcast and communication systems.

The Department upholds a high standard of teaching and learning, facilitated by highly qualified faculty members. It's well-equipped laboratories offer students ample opportunities to enhance their practical knowledge under the guidance of technically proficient instructors. Moreover, the Department is actively engaged in conducting research activities in the Electrical Power Sector, providing students with a platform to explore and innovate in this vital field.

MESSAGE FROM HOD

DR.K.NEELIMA

Professor and HOD, Dept. of EEE ,VBIT

Warm Welcome to the Third Issue homepage of vidyut vidhya.

This magazine speaks about the successful journey of EEE department in various aspects. I am proud to see that the students of our department have put an incredible effort in bringing up this magazine with useful information. Our department has a team of qualified and experienced faculty with which we are striving hard continuously to improve upon the quality of education and to maintain its position of leadership in Engineering and Technology. We always work with the motto "Nothing can be achieved without Genuine Effort." The core values of the department help the students to develop their overall personality and make them worthy technocrats to compete and work at global levels. Our department has been conducting Seminars, AV classes and Tutorials very efficiently and effectively since its beginning, this made the students abreast with the latest developments in the field of Technical Education.

Specialized knowledge is imparted regarding simulation of various processes using SCILAB, MATLAB, MI POWER etc by organizing Workshops, Guest Lectures and Technical Fests. Our Faculty and Students actively participated in various activities like R&D, Co-Curricular and Extra-Curricular. Industrial visits are regularly organized to enhance the practical knowledge of the students and to interact with the recent technologies used in the industries. I wanted to thank our Faculty and Students for all their Commitment and determination shown to get through NBA Accreditation which laid a good platform in focusing more Potential Technological Growth Opportunities. Before concluding I would say, the content in the Magazine has substantial knowledge repository which gives lot of learning growth to the readers.

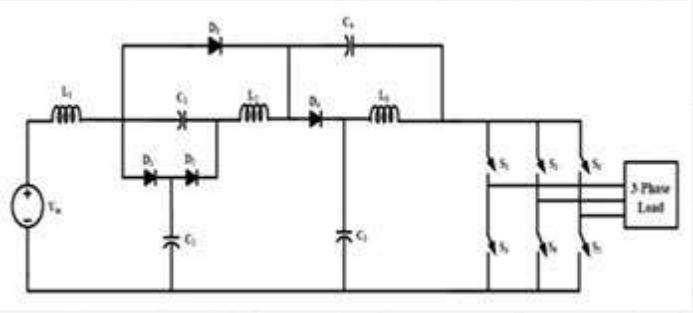
Multi Class Semantic Segmentation of Caprine Parasites Using Deep Lab V3+ Architecture:

Dr. K. Neelima's paper presents a novel approach using DeepLabv3+ architecture for multi-class semantic segmentation of caprine parasites, aiming to improve diagnostic accuracy. The study collected 650 microscopic images of seven common parasite species and achieved impressive results with 99.6% accuracy, 99.7% precision, 99.9% recall, 99.8% F1 score, and 99.6% Jaccard index. Training utilized Inception V3 backbone over 70 epochs with a batch size of 4 and evaluated on 150 test images. This technique offers faster and more accurate parasite diagnosis, potentially addressing the shortage of skilled experts in the field.

-Dr.K.Neelima

A Novel Switched-Capacitor Enhanced-Boost Quasi Z-Source Network:

Dr. V. Jagan's paper presents the "Novel Switched-Capacitor Enhanced-Boost Quasi Z-Source Network," introducing a switched-capacitor enhanced-boost quasi-Z-source inverter (SCEB-qZSI) for renewable energy systems. The innovative converter utilizes switched capacitors to enhance voltage boost while minimizing shoot-through conditions, improving DC-link voltage. Benefits include continuous input current, reduced ripple, common grounding, and high output voltage gain. The paper conducts thorough theoretical analysis supported by simulation data, demonstrating the SCEB-qZSI's potential for electric vehicles, industrial systems, and renewable energy setups. Key parameters like shoot-through duty ratio are discussed, with theoretical derivations and simulations providing insights into performance characteristics, making it an attractive option for cost-conscious applications.



-Dr.V.Jagan

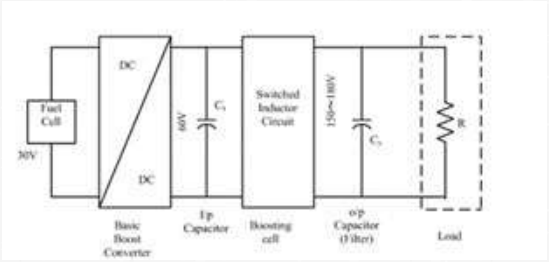
Power performance and emissions analysis of outboard diesel engines by use of waste cooking oil biodiesel:

Dr. C.R. Edwin Selva Rex's study examines the "Power Performance and Emissions Analysis of Outboard Diesel Engines" using waste cooking oil (WCO) biodiesel. It addresses challenges in accurately measuring fuel consumption and power output in high-speed small boats. WCO biodiesel reduces CO emissions but increases NOx emissions, shedding light on its feasibility for sustainable marine transportation.

-Dr.C.R.Edwin Selwa Rex

Fuel Cell Based Ultra-Voltage Gain Boost Converter for Electric Vehicle Applications:

Dr. B.Nagi Reddy presents a "Fuel Cell Based Ultra-Voltage Gain Boost Converter" for electric vehicles, replacing transformer-based systems. The novel switched inductor circuit reduces cost and weight, enhancing performance.



Operating without a transformer, it achieves significant voltage gains, ideal for pollution-reducing electric vehicles.

-Dr.B.Nagi Reddy

Innovation Unfolded: Foldable Electric Vehicle Design Patent:

Mr. V. Jeetender's patented Foldable Electric Vehicle Design marks a significant stride in sustainable transportation. With an innovative foldable frame and eco-friendly electric propulsion system, it enhances urban mobility without sacrificing performance.

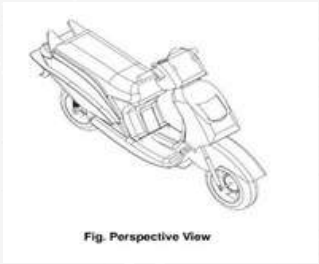


Fig. Perspective View

This achievement showcases Professor V. Jeetender's expertise and the department's dedication to innovative and sustainable transportation solutions.

-Mr. V. Jeetender

DEPARTMENTAL ACTIVITIES

Industrial visit to Lower Jurala Hydro Electric Power Generation Plant

Vignana Bharathi Institute of Technology arranged an industrial visit on September 30, 2023, to the Lower Jurala Hydro Electric Power Plant for students of Electrical and Electronics Engineering, overseen by Dr. K. Neelima, Head of the department. Forty students and three faculty coordinators participated.

Situated near Mulamalla Village, Atmakur Mandal, Jogulamba Gadwal district, Telangana, the Lower Jurala Hydro Electric Project is a significant ongoing venture.It comprises six units, generating 40 MW each, owned by Telangana State Power Generation. With a reservoir capacity of 14.2 million cubic meters and a net head of 20 meters, it has produced 534.43 GWh of electricity, offering valuable practical insights into hydroelectric power generation.

Industrial visit to HPCL Fuel refinery

On September 22, 2023, Vignana Bharathi Institute of Technology organized an industrial visit to HPCL, Ghatkesar, for Electrical and Electronics Engineering students, led by Dr. K. Neelima, Head of the department.

Thirty-one students and one faculty coordinator, including Mr. M. Sai Prasad Reddy, Dr. Nagi Reddy, and Mrs. S. Chaithanya, participated, departing from the college at 1:00 PM. HPCL, a significant industrial entity in Ghatkesar, Hyderabad, provided firsthand insights into petroleum sector operations.

Guntipally Nandini
Kotapati Gopikrishna
Kanthi Sri Charan
Bongarapu Rohit Reddy

TITLE

SU DO KU Configuration os Solar PV Array Under Partial Shading Conditions

(Scopus Indexed)

Guide - Dr. K. Neelima

Jalli radhika
Ketham Sai Prudhviraj
K. Badrinath
Kukutla Akhila

TITLE

Wind Turbine with Line- Side PMSG Fed DC-DC Converter for Voltage Regulation

(Scopus Indexed)

Guide - Dr. B. Nagi Reddy

Damera Harshan
Ganam Vinay Kumar
Eshwar Krishna Nermetla
Jampala Prashanth

TITLE

A Hybrid SEPIC Converter for Efficient DC Microgrid Power Management

(Scopus Indexed)

Guide - Dr. B. Nagi Reddy

Vallala Yashwanth
Vungarala Chaithanya Kumar
Pathi Raju
Vadlakonda Bhavani

TITLE

Electric Vehicle Energy Management System using Fuzzy Logic

(Scopus Indexed)

Guide - Dr. S. Sundeep

STUDENT PUBLICATIONS

Snehalatha Banoth
Soma Deekshitha
Parimi Venkata Raghava Jayanth
Sarla Srinivas

TITLE

Investigation of Novel Extreme Boost Quasi Z Source Converter

(Scopus Indexed)

Guide - Dr. Vadthya Jagan

Ullemgondla Gouthami
Ongole Durga Nikesh
Salveru Bharadwaj
Thati Dinesh

TITLE

Superior Boost Quasi-ZSource Inverter : Analysis and Implementation

(Scopus Indexed)

Guide - Dr. Vadthya Jagan

MAJOR ACHEIVEMENTS

TITLE

CIRCUITRY a technical event proposed by Power and Energy Society of IEEE VBIT - SB has received a grant of 500$ from IEEE Young Professionals STEP Funding

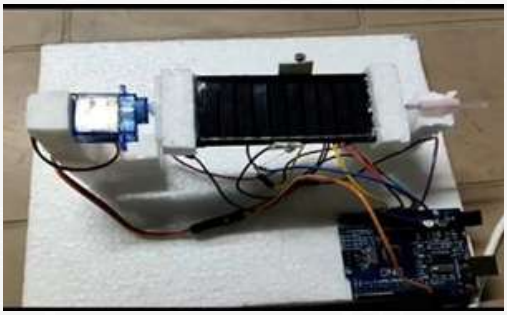
The Department of Electrical and Electronics Engineering has established as Research and Development Cell officially recognized by the All India Council for Technical Education (AICTE).

Electricity Generation using Waste Material

Y. Navya and O. Rajeshwari created a prototype for Renewable Energy Systems, centering on transforming waste into valuable resources and producing electricity from various waste sources, such as municipal solid waste. Anaerobic digestion and gasification technologies are pivotal components of their project.

-Y.Navya
O.Rajeshwari

Solar Tracker by using Arduino



Solar energy, being clean and abundant, is ideal for power generation. Enhancing the efficiency of photovoltaic (PV) solar panels through solar tracking systems is crucial. This PRA utilizes Arduino and light-dependent resistors (LDRs) to adjust the PV panel's angle for optimal energy.

- G.Sri Kavya
V.Sai Lalitha

Production of Electricity using Speed Breakers

Generating electricity from speed breakers, or kinetic energy recovery systems (KERS), offers a sustainable method by utilizing piezoelectric or electromagnetic generators beneath roads.

-Y.Shiva Kumar
G.Sai Krishna

Neuralink

Elon Musk, the billionaire behind Tesla and SpaceX, also delves into unique ventures, like Neuralink, aimed at achieving a "symbiosis" between human brains and artificial intelligence. Neuralink develops neural interface technology, which could record and stimulate brain activity when embedded in a person's brain.

Aside from Musk's futuristic aspirations, the technology holds immediate medical potential, including treating conditions like Parkinson's disease. Neuralink's chip, comparable in size to a coin, is designed to be implanted into a patient's skull. From the chip, a network of minuscule wires, each approximately 20 times thinner than a human hair, extends into the patient's brain.

Smart Grid

Smart grids are electrical networks that leverage advanced technologies to detect and adapt to changes efficiently. Through a two-way flow of electricity and data, they can dynamically adjust supply to meet demand and ensure uninterrupted operation.

This responsiveness is enabled by their ability to swiftly detect and respond to fluctuations in energy usage. As a result, smart grids can proactively address unforeseen challenges and exhibit greater resilience compared to conventional electricity grids. Electricity grids achieve this through a network of transmission lines, where energy is transmitted at high voltage to minimize energy loss. Subsequently, a distribution network transports electricity to end-users.

INTRESTING FACTS

1. Electricity travels at the speed of light, which is 186,000 miles per second
2. The first electrical battery, known as the Voltaic pile, was invented by Alessandro Volta in 1800.
3. Nikola Tesla, one of the most famous electrical engineers, invented alternating current (AC) power systems, which revolutionized the distribution of electricity.
4. Electricity can be created using water, wind, the sun, and even animal waste.
5. The International Space Station (ISS) has a solar array that spans about an acre, making it the largest solar power system ever used in space.
6.Electric eels can produce up to a 600-volt shock.
7. The invention of the transistor in 1947 by John Bardeen, Walter Brattain, and William Shockley paved the way for modern electronics.
8. Electricity is present in our bodies - our nerve cells use it to pass signals to our muscles.
9. The development of integrated circuits (ICs) in the 1950s and 1960s led to the miniaturization of electronic devices and the birth of the modern computer era.
10. Electrical engineers are involved in the design and development of renewable energy technologies such as wind turbines, solar panels, and hydroelectric power systems.
11. Fiber optics, which use light to transmit data, were invented in the 1960s and have revolutionized telecommunications and internet connectivity.
12. Electrical engineers play a crucial role in the design and operation of electric vehicles (EVs), including the development of batteries, electric motors, and charging infrastructure.
13. The electric power grid is one of the largest and most complex engineering systems in the world, spanning thousands of miles and delivering electricity to billions of people.

Mr.V.Jeethender
Assistant Professor of EEE
Faculty Coordinator

G.Ice
22P65A0206
Team Lead

G.Sainath
22P65A0204
Co-Lead

S.Vishnu Preetham
21P61A0213
Designer

A.Kedarnath
21P61A0202
Designer

N.Nehan Srinivas
22P65A0215
Technical Coordinator

N.Nithin Nayak
22P65A0214
Documentation Coordinator

Name: _____ Date: _____

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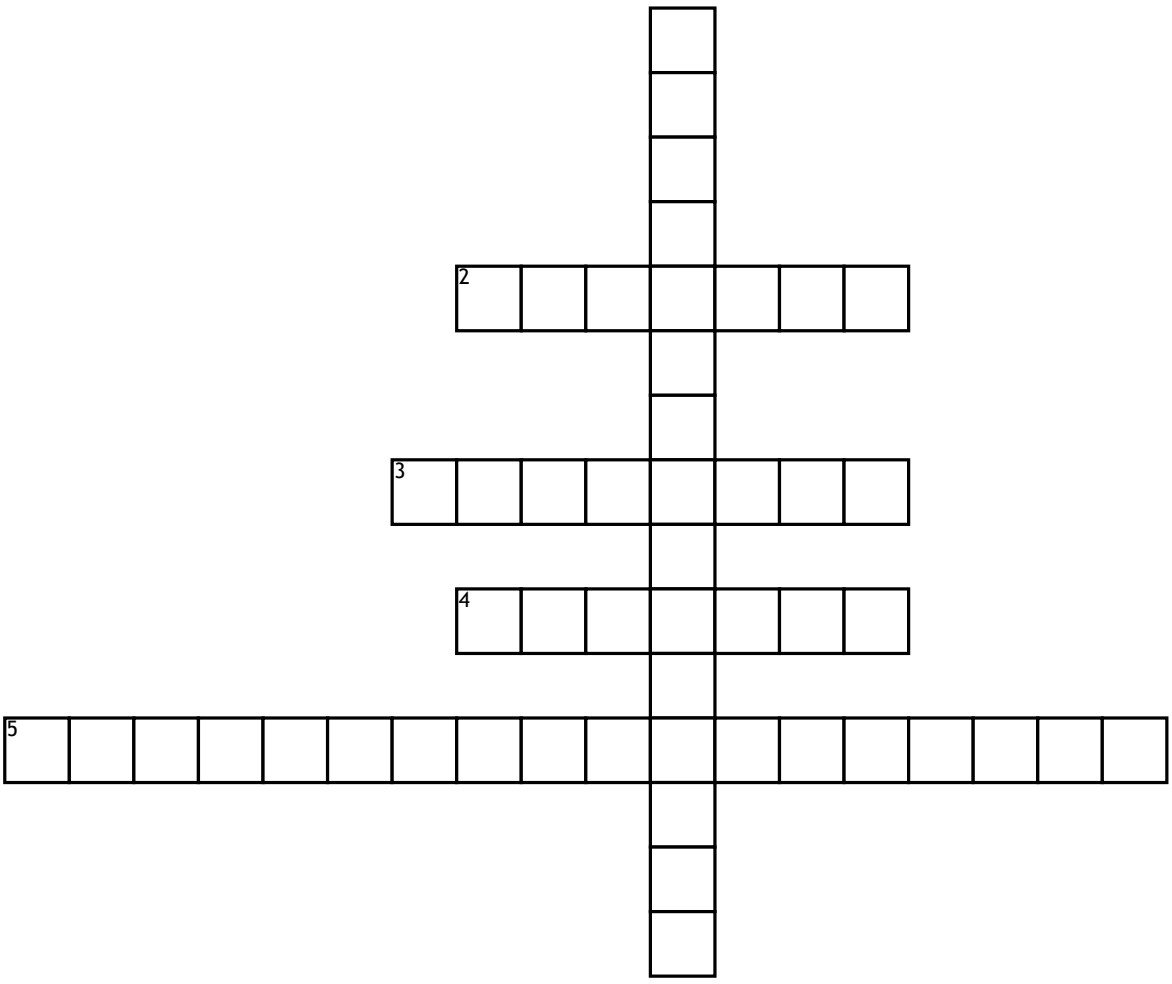

Across

2. Appears across open circuit

3. An example of Passive element

4. current is measured in

5. abbreviation of EMF

Down

1. EV STANDS FOR

Department of
ELECTRICAL AND ELECTRONICS ENGINEERING

Email - eeevbit21@vbithyd.ac.in