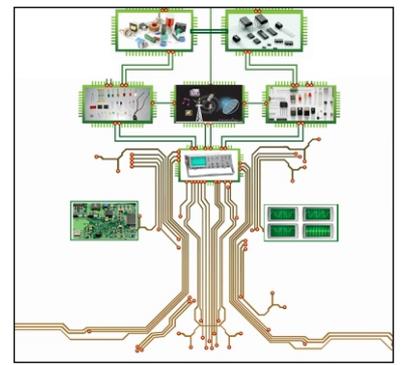


ELECTRONICA

Newsletter

Department of Electronics & Communication
Engineering



Volume 5

Issue 1

July -Dec 2019

Vision and Mission of the Institute

Vision

- To be one of the premier Institutes of Engineering and Management education in the country

Mission

- To provide Engineering and Management education that meets the needs of human resources in the country
- To develop leadership qualities, team spirit and concern for environment in students

Objectives

- To achieve educational goals as stated in the vision through the mission statements which depicts the distinctive characteristics of the Institution
- To make teaching-learning process an enjoyable pursuit for the students and teachers

Vision and Mission of the Department

Vision

- To be a renowned department for education in Electronics and Communication Engineering in Karnataka State, moulding students into professional engineers

Mission

- To provide teaching - learning process in Electronics and Communication Engineering that will make students competitive and innovative to adapt to needs of industry and higher learning
- To imbibe professional ethics, team spirit and leadership qualities to succeed in changing technological world
- To inculcate empathy for societal needs and concern for environment in engineering design and practice

Program Education Objectives

After 2 to 3 years of graduation, the students will have the ability to:

- Analyze, design and implement solutions in Electronics and Communication Engineering and adapt to changes in technology by self/continuous learning
- Engage in higher learning and contribute to technological innovations
- Work with professional ethics as an individual or as a team player to realize the goals of the project or the organization
- Work with respect for societal values and concern for environment in implementing engineering solutions



This edition of Electronica is dedicated to **Albert Fert**, a French Scientist and **Peter Grunberg**, a German Scientist who were awarded the 2007 Nobel Prize jointly in Physics for the discovery of the giant magnetoresistance (GMR) which brought a break through in Giga byte hard disks.



What's inside...

- *Articles*
- *Crossword*
- *Department Events*
- *Student Achievements*
- *Staff Achievements*

And more...



Vidyaamruthamashnuth

B. N. M. Institute of Technology

(Approved by AICTE, Affiliated to VTU, Accredited as Grade A Institution by NAAC.

All UG branches - CSE, ECE, EEE, ISE & Mech.Engg. Accredited by NBA for academic years 2018-19 to 2020-21 & valid upto 30.06.2021)

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From the Editors' Desk

Dear Readers,

The Department of Electronics and Communications Engineering, BNMIT is delighted to present to you the 2019 Winter Edition of "ELECTRONICA", the Department Newsletter.

In the 21st century, the impact of technology in modern life has grown to be unmeasurable. We use technology on a daily basis to accomplish specific tasks or interests. In most cases, Modern Technology is simply an advancement of old technology due to its increased benefits or newfound popularity. It is rapidly changing and evolving. Therefore, it is really essential for future engineers to keep up with the technological advancements. Thus, the Department of ECE, BNMIT is pleased to present the 2019 Winter Edition of ELECTRONICA.

Since the inception of the newsletter, the editorial team of ELECTRONICA has been proud to provide a platform that aligns itself with the goals of Technological Advancement. Since, technology seems infinite, it sparks the brain to work to its full potential. This newsletter is an excellent way for the readers to discover more about the interests of like minded people.

ELECTRONICA gives an opportunity to the students to explore and express their interest on the newest developments in the field of electronics. It strives to provide a platform for the students to publish their ideas at a very early stage which further helps them to continue their research with confidence. It also highlights all the technical and extracurricular achievements of the students, staff achievements and the events organized by the Department of Electronics and Communication Engineering at BNMIT. The Editorial Team is indebted to it's contributors for making ELECTRONICA, a content rich newsletter with topics of great interest, enabling a higher level of curiosity for our readers.

Editorial Team

About the Department

The Department of Electronics and Communication Engineering started in the Year 2001. The Department has two programs; B.E and M.Tech (VLSI Design and Embedded Systems), affiliated to VTU. The Department is accredited by NBA for three academic years (2018-21). The Department has a VTU recognized Research Centre with twelve registered candidates pursuing their doctoral degrees. The Department has a team of highly qualified and dedicated staff with teaching, research and industrial experience. Well-equipped laboratories with State-of-the-art infrastructure and class rooms with LCD projectors and smart boards provide enhanced learning environment to cater to the budding engineers of tomorrow.

Skill Development Programmes, Faculty Development Programmes, Workshops, Seminars and Invited Talks are regularly organized in the department for students and staff to provide continuous learning, knowledge and skills up gradation. Various technical activities are conducted under IEEE, ISTE, IEI students' chapters. Industrial visits are organized for students and faculties regularly to enhance Industry-Institute interaction. MoUs have been established with industries and research organizations for research activities and consultancy work. Additional facilities have been created for doing innovative projects in the department laboratories, Makers Lab for I year B.E. students and enhance programming skills through Codetantra platform for better placement opportunities. The faculty and students are involved in the department Flagship project 'Bhageerathi'. Academic performances of the students are excellent with fourteen university ranks from the inception. The students do projects, internship training in industries and academic projects in reputed organizations, regularly participate in inter-college and intra-college technical, cultural & sports events and regularly bring laurels to the department. The students have been placed in reputed companies and around 10% of the students are going for higher studies in good universities every year.

Dr. P.A. Vijaya
Professor & Head, Dept. of ECE

Quantum Technology

Current electronics and communications rely on electrons, which we have become expert in manipulating. However, while electrons are extremely small and nimble, they are actually holding back how fast and small we can make electronics. Ultimately, the difference between a one and a zero in a computer is one electron. So, we need a new approach if we want to go smaller and faster.

So, what's next?

How can we make tech faster and smaller?

How can we push the boundaries of what we already know about how the world works?

The answer is “Quantum”

Quantum Technology is an emerging field of Physics and Engineering which relies on the principles of Quantum Physics. Quantum computing buzz is one of a quartet of disciplines under the umbrella of Quantum Technology. The other three are Quantum Communication, Sensing and Simulation.

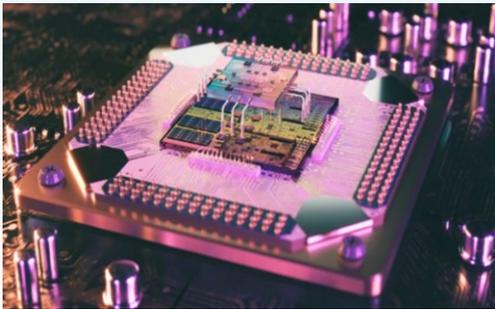


Fig. 1: Artist's Impression of a Quantum Processor

Transformational promises across each area are bold, yet entirely unfulfilled. Entanglement and superposition are two concepts underpinning quantum technology.

-Superposition holds the matter that can simultaneously exist in more than one quantum state.

-Entanglement theory posits those particles that become dependent on each other's quantum states, behaving like single entities.

Main Types of Quantum Technology:

Quantum Communication: Ostensibly Hack-Proof: An easy way to think about quantum communication is that it's about data transmission. Quantum-based channels could help companies share more information with greater security. It's also the foundation of what's called the quantum internet.

Quantum Computing: Better and Faster Business Applications: While both classical and quantum computing are focused on data processing, the latter represents information as elements called qubits (Fig. 1). Among quantum computing potential benefits is the ability to help business solve certain problems exponentially faster. It is well-suited for processes that can tax the limits of classical computing, like warehouse management and transportation logistics. Major automotive companies are already testing how quantum can streamline the delivery of multiple products to multiple locations. With quantum, logistics providers hope to map optimal routes based on current traffic and shipments for every vehicle in real-time – all at once.

Quantum Sensing: More Data Powers, Better Outcomes: Medical diagnostics is another area where quantum's promise shines. Magnetic Resonance Imaging (MRI) has always been based on quantum technology. The newest advancements in quantum sensing improve accuracy, giving physicians a clearer picture of the patient's body. The technology extracts information from individual atoms, which is much more precise than just measuring a group of atoms.

Quantum Simulation: A Boon to R&D: Scientists and Researchers in industries like pharmaceuticals and chemistry are looking at quantum simulation to develop better products and save money. If we want to create a drug with special properties or predict how different components will interact and behave with specific results, quantum simulation could be less expensive and faster. Instead of experimental trial, error and often happenstance discoveries, industries could predict results faster and with greater accuracy. Quantum simulation can model larger quantum systems compared to classical or even supercomputers. Quantum technology can be hard to understand because it's based on principles that explain the experimentally observed behaviour of the microscopic world. These concepts are alien to the intuitions most of us derive from our daily experiences in the macroscopic world. That's why it makes sense to learn as much as possible about it, for better

source : <https://www.forbes.com/sites/sap/2019/02/28/what-is-quantum-technology/#70983175606a>

Electronics in Space and their Challenges -How to resolve them?

Ever wondered how electronic components that are so small, survive in the space and work so accurately? Well, here is the reason behind this. Electronic components used in spacecrafts are built to survive the harsh space environment and remain reliable. Several tests are performed where the components are tested under mechanical stress, wide temperature fluctuations and intense ionizing radiation. All space grade components should be qualified. Some of them are star sensors, lander image processor and cameras. In order to ensure the desired reliability, system designers use chips that are tried and tested several times, and not the latest chips available. An example of such reliability is the Twin voyager spacecraft (Fig. 2) launched in 1977 that is still functioning.



Fig.2: Twin Voyager Spacecraft

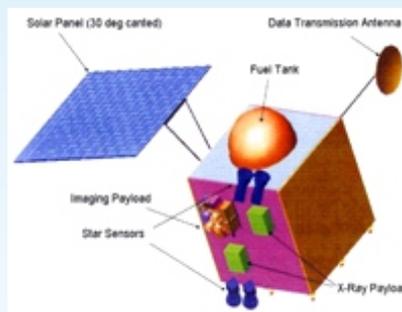


Fig. 3: Chandrayan 1: Lunar Orbiter

A few of the techniques that are used for hardening the electronic components are as follows:

Potting: Severe vibrations during a rocket launch can induce mechanical stress on the electronics and damage them. This process involves filling the assembly with a solid or gelatinous component to resist shock and vibrations. Potted electrical transformer is installed in PCB.

Silicon on Insulator: Chips used in space are manufactured on an insulating substrate instead of silicon, allowing them to be more radiation-resistant and fault-tolerant.

RAM Types: Static RAMs (SRAM) are preferred instead of dynamic RAMs (DRAM) as their power consumption is less. This becomes crucial when spacecraft goes into low power modes and still needs to continuously send the telemetry data.

Effects of Radiation: This is the most significant challenge to resolve. A wide range of effects, known as Single Event Effects (SEE) can cause operational issues. Ions interacting with chips can flip the states of bits and cause errors in memory and also when they pass through inner transistor junctions, they can cause latch-ups that lead to short circuits. These can be overcome only with a hard reset, while some of them cause permanent damages.

One of the incidents is CHANDRAYAN 1 (Fig. 3). India's first lunar orbiter Chandrayan 1's, star sensor failed to work after a few months in lunar orbit. The extreme exposure to solar radiation combined with other factors caused the backup star sensor to fail. The rest of the two-year mission had to be completed using the onboard Gyroscope and constant corrections from the ground station. The mission was ultimately successful but it was a reminder that even space grade components can falter. Let us also be proud for the success of Chandrayan 2 in this context. All these are a few examples to show how accurate and efficient electronic components should be to work in the space for stipulated amount of time and make the people's life easier back on Earth. Thus, it takes a great responsibility of a designer to design these components.

Source: <https://medium.com/teamindus/space-grade-electronics-or-how-nasas-juno-survives-near-jupiter-bb57f03ae0cb>

Deeksha R, V SEM A

Say Goodbye to Pills, Nano Robots can Cure

Nano Robots will be able to repair damaged or diseased tissues. The circulatory system is the natural path for these devices and the nano robots will pass through the blood stream to the area of defect. They attach themselves to specific cells, such as cancer cells and report the position and structure of these tissues. A creative methodology in the use of these devices to fight cancer involves using silicon nano machines with a thin coating of gold and light in the near infrared spectrum. Light in the 700-1000 nano meter range will pass through the tissue and reaches the defective cell. When this infrared light strikes the particular type of nano robot, the device gets hot due to the oscillations of the metal's electrons in response to the light.

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Using an MRI, the nano robot is specifically placed in the cancerous region, and then the light causes the devices to heat to 131°F which destroys the cancerous cells but doesn't damage surrounding tissues. This is the new technology, without any drawbacks. These nano robots can cure any diseases without affecting any other cells or tissues (Fig. 4).

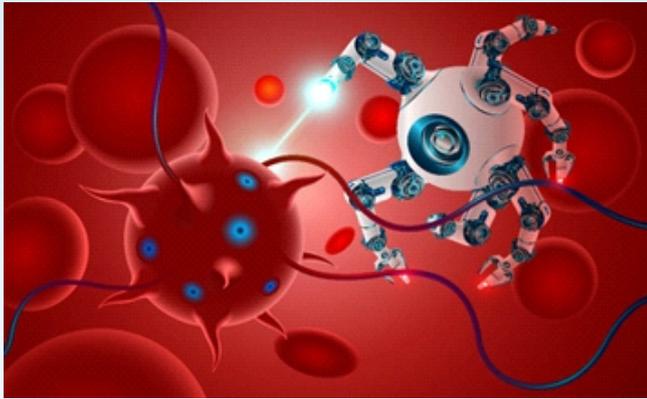


Fig. 4: Nano-robot Depiction

The future vision: Imagine going to the doctor to get treatment for a fever, instead of giving you a tablet the doctor implants a tiny robot into your bloodstream. The robot detects the cause of your fever, travels to the appropriate system and provides a dose medicine directly to the infected area. This is going to happen in a few years of time from now. Each person is going to have a nano robot in his body which is going to monitor human body system. So, the time arrives to enjoy with the robot within ourselves.

Source: <https://www.elprocus.com/nanorobots-and-its-application-in-medicine/>

Tejaswini S, V SEM B

Optical Trapping of Nanoparticles

Nanoparticles are essentially very small pieces of material that measure no more than an atom. They are particles between 1 and 100 nanometres (nm) in size. Since, they can literally be particles from any substance, they are versatile enough that they can be used in many types of technological applications, from delicate electronics to revolutionary medical procedures. Researchers at the Centre for Nano Science and Engineering at the Indian Institute of Science (IISc), Bengaluru, have developed a technique to trap and move tiny objects in the nanoscale using optical tweezers employing light. Optical trapping is a technique for immobilizing and manipulating small objects in a gentle way using light, and it has been widely applied in trapping and manipulating small biological particles.

Optical tweezers are scientific instruments that use a highly focussed laser beam to provide an attractive or repulsive force, depending on the relative refractive index between the particle and surrounding medium. These forces can be used to physically hold and move microscopic objects, in a manner similar to tweezers. These can trap and manipulate small particles, whose size is typically in microns, including dielectric and absorbing particles.

Although optical tweezers based on far-fields have proven highly successful for manipulating objects larger than the wavelength of light, they face difficulties at the nanoscale because of the diffraction-limited focused spot size. This has motivated interest in trapping particles with plasmonic nanostructures, as they enable intense fields confined to sub-wavelength dimensions. Plasmons are density waves of electrons, created when light hits the surface of a metal under precise circumstances. Because these density waves are generated at optical frequencies, very small and rapid waves, they can theoretically encode a lot of information, more than what's possible for conventional electronics.

The development of "Plasmonic Tweezers" which works on the principle that when a disc of noble metal, like gold, is illuminated with light, it creates an electromagnetic field around the disc, can attract and hold on to tiny particles. Plasmonic tweezers are limited by the fact that they are fixed in space and can therefore only trap objects that come close to them.

Tweezer-in-a-Tweezer

A silver nano-disc is integrated with a micro rod made of glass and the combination can be manipulated using laser beams alone. This "tweezer-in-a-tweezer" approach can trap objects of about 40 nanometres in size, using a single laser beam. This is the typical size of a virus or DNA. The optical tweezer holds the plasmonic tweezer and the plasmonic tweezers trap the target nanoparticles, therefore tweezer (plasmonic) in tweezer (optical).

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Trapping and Active Rotation of Nanoparticles

In the experiment, the trapped laser beam ($\lambda=974\text{ nm}$) is loosely focused onto the gold nanopillars, which are immersed in a colloid solution comprising fluorescent polystyrene spherical nanoparticles. Here, 110 nm diameter nanoparticles are trapped, the incident laser beam has an average intensity $I_{\text{avg}}=10\text{ mW }\mu\text{m}^{-2}$. Fluorescent images of the trapping process obtained at successive times (t_1-t_4) are shown in Fig. 6(a). The sphere appears white, whereas the gold nanopillars appear black. At time t_1 , the sphere is close to but is not trapped by the gold nanopillar, and moves under Brownian Motion or random fluctuations. At time t_2 , the sphere has moved sufficiently close to the nanopillar to be drawn into one of the hot spots, by the gradient force and be trapped. The positions of the two hot spots are determined by the polarization of the input laser beam. Here, it is to demonstrate that this can be employed to rotate particles in a precise manner, as shown in Fig. 6(b). After the sphere is trapped, the input beam polarization is manually rotated during frames t_2-t_4 , resulting in the sphere rotating clockwise around the nanopillar.

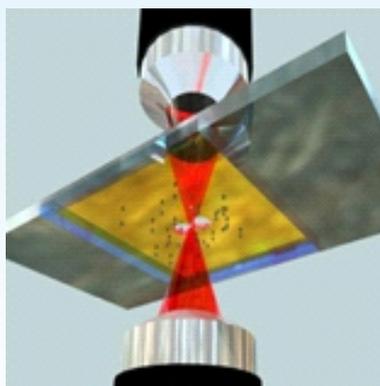


Fig. 5: Optical tweezers

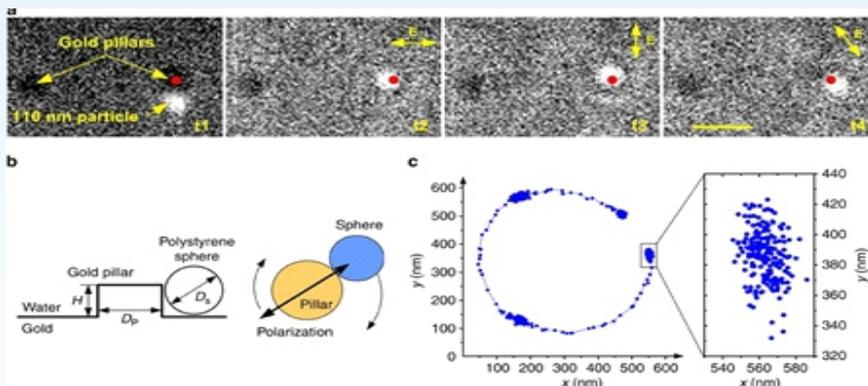


Fig. 6: (a) Trapping Process Fig. 6: (b) & (c) Rotation of Nanoparticles

Applications of Trapping Nanoparticles

Nanoparticles present in the house cleaning chemicals and self-cleaning fabrics, have been engineered on a molecular level so that when they encounter unwanted dirt or stains and they eliminate it. But perhaps, the timeliest use of nanoparticles lies in their medical applications. Their pathogen-sized proportions naturally make them prime candidates to fight against various unwanted invaders of the human body, which means they can be injected into the bloodstream to fight viruses and bacteria. It seems likely that nanoparticles will also be key players in fighting against cancer. In essence, researchers could track these tiny particles as they make their way through the human system and deliver doses of anti-cancer drugs to the cancer site, killing off every last molecule of the tumor without painful side effects or unnecessary damage. This would not only make cancer treatment much less uncomfortable for patients, but also faster and more effective.

Source: www.wikipedia.org, www.google.org, www.researchgate.com

Sonika M, V SEM B

Evolution of Smartphones

Smartphones are a class of mobile phones with multipurpose mobile computing devices. They are distinguished from feature phones by their well-built hardware capabilities and extensive operating systems. Smartphones typically include various sensors and integrated chips. They facilitate wider software, internet, multimedia functionality like music, video, camera and gaming alongside core phone functions such as voice calls and text messaging. They also support communication protocols such as Bluetooth, Wi-Fi, GPS, satellite navigation and personal voice assistant.

The modern smartphone has taken a long time of about 27 year to reach the present state in 2019 and it has evolved a lot along the way. The history and evolution of smartphone is important because it gives us a glimpse of past technology and also the future trends based on emerging consumer trends.

IBM and The World's First Smartphone

In 1992, IBM revealed a revolutionary device that had more capabilities than its preceding cell phones and named it as 'Simon Personal Communicator'. The Simon was advanced for its time and had features like touchscreen, email, notes, calendars, apps and other widgets. It had a small monochrome LCD display and almost one-hour battery life. Clearly, Simon created a great launching pad for others to innovate and this was the beginning of the new era of smartphones.

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Emergence of Smartphone Companies

NOKIA: In 1996, Nokia introduced 'Nokia 9000 Communicator'. It had GEOSTM 3.0 Operating System. There was total 8 MB internal memory which included 4 MB for operating system, 2 MB for program execution and other 2 MB for user data storage. It had a Grayscale LCD with resolution of 640×200 pixels. It could do everything that Simon could do and had even more capabilities including a graphical web browser and QWERTY keyboard.

MOTOROLA: In 1996, Motorola launched device named as 'Startac' which was the first ever flip mobile phone. Further, the company introduced 'A760' model and it was the first handset based on Linux OS and Java technology. In 2003, Moto RAZR V3 was launched as a successor of Startac and had very striking flip design.

SAMSUNG: The first Samsung smartphone was 'SPH-1300' and was released in October of 2001. It was the first Palm-OS-based smartphone from Samsung. It had color screen display and had many installed applications like memo pad, date book, calculator, mail and many more.

BLACKBERRY: Blackberry 5810 was the first Blackberry device with phone capabilities. It had features like calendar, music, complete keyboard, advanced security and internet access. Blackberry kept releasing more and more advanced devices and became the market leader in smartphones until iPhone gained stream.

APPLE: The Apple iPhone was one of the most advanced consumer smartphones that the market had ever seen. The first iPhone was launched in January 2007. It had many innovative features like multi-touch screen display, camera, internet, extended battery life, USB connectivity and microphone with compatible design.

The Modern Smartphones of 2019

There is a large difference in hardware from 2007 to 2019. That is everything is more advanced in latter. The devices are faster and more powerful than their predecessors. Multiple applications can be used at the same time with improved resolutions by HD Cameras. More memory and advanced graphics are incorporated. Live video streaming and online gaming are also there. Most importantly, the battery lasts for days instead of minutes or a couple hours. The upcoming Advanced Features include Flexible Displays, Stretchable Phones, Colour Changing feature, 5G Connectivity, Augmented Reality (AR) and Virtual Reality (VR), Solar Charging, E-sim cards-based phones. The technology and innovation of smartphones are growing continuously and more advanced features are yet to come in future.

Source: <https://www.businessinsider.in/tech/mobile/news/five-key-features-to-expect-in-future-smartphones/articleshow/71577761.cms>

Shubham Raj, V Sem B

Importance of Load Shedding

With urbanization and over-reliance on technology, the demand for electricity increases rapidly and the generating companies must increase the supply to keep up with the demand. If this does not happen, the load may exceed the supply and cause instabilities.

Load shedding is a way to distribute demand for electrical power across multiple power sources. Load shedding is used to relieve stress on a primary energy source when demand for electricity is greater than the primary power source can supply. The demand may become inconsistent during peak periods. Whenever, the power generated is insufficient to support the load, the electrical supply and distribution system becomes unbalanced and unstable. If not controlled, the system can collapse and cause a total blackout. In such a situation, it may take hours or days to restore the power.

In power systems, an excess load puts a stress on the generating equipment. It slows down the prime movers, associated generators and other parts of the system as they attempt to cope with the excess load. This leads to a combination of events including power swings and overloads which can cause the system becoming unstable. Some of the parts such as protection systems may interrupt the supply due to the excess current resulting from the overload.

Load Shedding Procedures

Utility companies use scheduled load shedding so that the available electricity is fairly shared by the consumers. This involves switching off some parts of the electricity supply network in a planned and controlled process. They alternate between different parts and time schedules to ensure that at least everyone gets power at a specific time. By dropping off the excess load, the power system remains stable.

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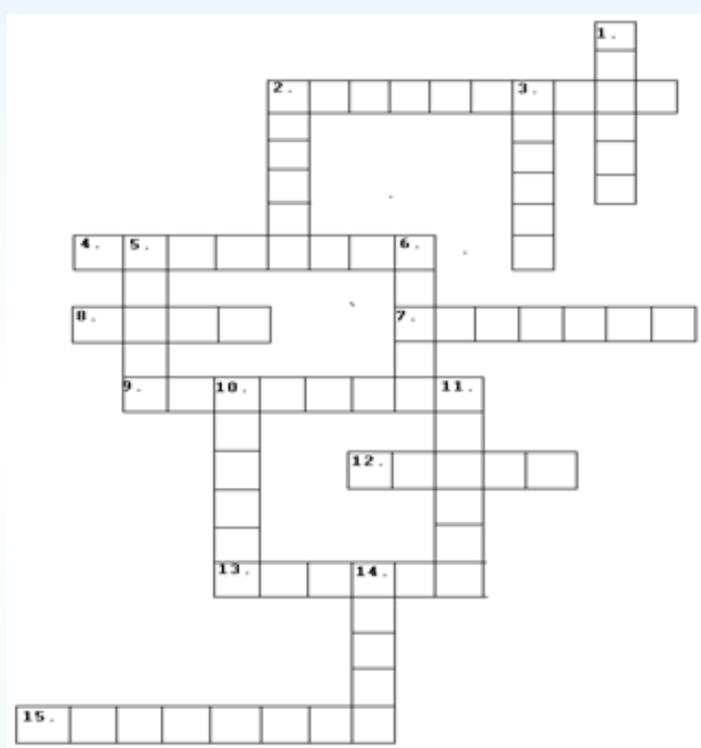
Some smaller generators such as those used in domestic applications have inbuilt load shedding capabilities. This becomes necessary when these are used as standby generators, in the event of a utility power outage, the emergency supply kicks in. Since all the circuits and appliances are connected, the load demand may exceed the generator capacity. When the load becomes too much, the generator sheds some of the smaller non-critical circuits automatically in an attempt to reduce the load.

Advantages of Load Shedding

It prevents overloading and damage of the power generators. It prevents instability and system collapse of the electrical generation and distribution systems. It ensures that consumers or parts of the network have power as opposed to a total blackout. It serves as a warning to the utility hence forcing them to increase capacity, and efficiency so as to meet the demand.

Nagaveni, III Sem B

Crossword



Across:

2. The process of applying a signal to carrier.
4. Mass-energy equation was given by.
7. A device to power electric devices.
8. The branch of electronics which deals with elementary particles.
9. Signal at constant frequency to synchronize processing.
13. Mechanical property to measure stiffness of solids.
15. Constraining an input from continuous values.

Down:

1. Quantum of light
2. Basic element of modern electronic equipment.
3. Twisting effect of Force
5. Two-dimensional representation of an object.
6. Highly unreactive gases.
10. Function that takes arguments.
11. Device that allows current in one direction.
14. Signal generated by random fluctuations.

ACROSS

- | | | | |
|--------------|-------------|---------------|------------|
| 15. Quantize | 8. Nano | 2. Modulation | 7. Battery |
| 9. Embedded | 4. Einstein | 11. Diodes | 14. Noise |
| 13. Young's | | | |

DOWN

- | | | |
|-----------|-----------|------------|
| 1. Photon | 5. Image | 10. Binary |
| 2. Mosfet | 3. Torque | 6. Noble |

Sai Gagana V, V SEM B

Quotes:

True knowledge exists in knowing that you know nothing. Socrates

You cannot teach a man anything; you can only help him discover it in himself. Galileo

True courage is knowing what not to fear. Plato

Facts are not science-as the dictionary is not literature. Martin H. Fischer

To live a creative life, we must lose our fear of being wrong. Joseph Chilton Pearce

EVENTS ORGANIZED BY THE DEPARTMENT

A 5-day Faculty Development Program was organized on **'IoT based Project Design and Development'** by industry experts from RS Components and Telos Technologies during 24th – 29th June 2019.

A two-day workshop on **'IoT using Raspberry Pi'** by Mr. Sagar H. B., Telos Technologies, Bengaluru and Mr. Mahesh B. S., RS Components, Bengaluru was organized under 'Institution of Engineers India Students' Chapter', on 20th and 21st Sept 2019.

A two-day workshop on **'Arduino based IoT using LoRa Technology'** was organized by ISTE Students' Chapter – BNMIT with technical sessions handled by M/s Enthu Technology Solutions Pvt. Ltd. on 20th and 21st Sept 2019.

A Symposium on **'Nanotechnology and its Application'** was organized by IEEE- BNMIT Student Branch and IEEE Nanotechnology Council during on 20th and 21st Sept 2019. An Industrial Visit to **'VTU Nanoscience Center'**, Muddenhalli was organized on 21st Sept 2019, as a part of the symposium.

Skill Development Programme was conducted on **'Embedded System Design and Applications'** by Mr. Mohan H. M. and Shivraj Kumar, Digital Shark Technology, Bangalore during July – Oct 2019.

Skill Development Programme was conducted on **'RTL Design using Verilog HDL'** by Mr. Kaushik B K from NanoChip Solutions Pvt. Ltd during July – Oct 2019.

Skill Development Programme was conducted on **'Applications of Signal Processing Using MATLAB'** by Smt. Keerti Kulkarni and Smt. Chaitra N during July – Oct 2019.

A talk on **'Project Management: A Practical Approach'** by Sri Prasanna Harihar, General Manager, Head Sales Operations, Syngene International, Bangalore was organized under IEEE - BNMIT Student Branch on 16th Oct 2019.

An Industrial Visit to **'National Aerospace Laboratories'**, Bengaluru for 3rd year students was organized by Institution of Engineers India Students' Chapter on 25th Oct 2019.

A talk on **'Web Performance Optimization'** by Dr. Shailesh Kumar Shivakumar, Senior Architect, Mindtree Ltd, Bengaluru was organized by ISTE Students Chapter on 2nd Nov 2019.

An Industrial Visit to **BHEL-Electronics division, Bengaluru** was organized in association with ISTE students' Chapter-BNMIT on 4th Nov 2019.

STAFF ACHIEVEMENTS

Mrs. Prabhavathi P has delivered a talk on **'Research Opportunities in VLSI Domain'** during 5-day FDP on 'Physical Design and it's Verification' at Acharya Institute of Technology, Bengaluru on 25th July 2019.

Dr. Jyoti R. Munavalli has delivered a talk on **'Total Quality Management Tools'** at IIHMR, Bangalore on 24th Sept 2019.

Ten faculty members from the Department of ECE have successfully completed NPTEL Certification course examination during June-Nov 2019.

Mrs. Keerti Kulkarni and Mrs. Ashwini S Savanth completed Pre-Ph.D Comprehensive Viva Voce examination during Aug-Sept 2019.

STAFF PUBLICATIONS

Dr. Veena S Chakravarthi published a book titled **'A Practical Approach to VLSI System on Chip (SoC) Design'**, Springer International Publishing, 2019.

Ashwini S Savanth, P.A.Vijaya, Bindu M Kutty and Ajay Kumar Nair published a paper titled **'Functional Neuroimaging Studies of Different Forms of Meditation'** in International Journal of Research and Analytical Reviews, Vol. 6, Issue 2, June 2019.

Priyadarshini K Desai and Basavaraj I Neelgar published a paper titled **'Patch Antenna for 5G Sub-Band Frequency Range of 6 GHz'** in International Journal of Composition Theory (ISSN: 0731-6755), Vol. 12, Issue 6, pp. 68-72, June 2019.

Yasha Jyothi M Shirur published a paper on **'Efficient Method to Measure Dynamic Temperature Variations in a Non-Uniform Heat Dissipated Integrated Chip'** in International Journal of Computer Sciences and Engineering. (IJCSE), Vol. 7, Issue 6, June 2019.

M. Bharathi and Yasha Jyothi M Shirur published a paper on 'Optimized Synthesis of Dadda Multiplier Using Parallel Prefix Adders' in 2nd IEEE International Conference on Smart Systems and Inventive Technology (ICSSIT 2019), Francis Xavier Engineering College, Tirunelveli during 27-29 Nov 2019.

Ashwini S Savanth, Dr. P.A. Vijaya, Dr. Bindu M Kutty published a paper titled 'Functional Connectivity within Brain Networks of Long Term and Short term Meditators' in International Journal of Innovative Technology and Exploring Engineering, (Scopus Indexed) Vol. 9, Issue 25, 2019 presented in ICDECS-2019.

Lakshmi Bhaskar and Dr. Yamuna Devi C R published a paper titled 'Data aggregation and its impact on performance enhancement' in International Journal of Innovative Technology and Exploring Engineering, (Scopus Indexed) Vol. 9, Issue 25, 2019 presented in ICDECS-2019.

Keerti Kulkarni and Dr. P. A. Vijaya published a paper titled 'Parametric Approaches to Multispectral Image Classification using Normalized Difference Vegetation Index' in International Journal of Innovative Technology and Exploring Engineering, (Scopus Indexed) Vol. 9, Issue 25, 2019 presented in ICDECS-2019.

STUDENTS' ACHIEVEMENTS

Technical Achievements

Akshatha Pramod, Bhoomika M U, Deeksha R and Fauziah Batool I, have won Project Champion Award for their project titled "Mobile charging by coin insertion" in IPL Summer Competition 2018-19.

Srinivasan R of 3rd Semester, ECE has won Best Project Award at Semester Level in IPL Summer Competition 2019.

Eva D Saglani has received 'Best Intern award – 2019' during Internship in 'Internet of Things' at Tequed Labs Pvt. Ltd. from 15th July to August 2019.

Swathi Dayanand and Divyashree N of 5th Semester have won First prize in IEEE Poster presentation competition during IEEE Nanotechnology Symposium held at BNMIT on 20th September 2019.

Chetana Saligram, Deepali B K, Gowri K S and J Ajay Kumar of 7th Semester have participated in WIE CODE, a 12 hour hackathon conducted at SIT, Tumakuru on 12th October 2019.

Twenty students have completed NPTEL Certification course examination during June-November 2019.

Papers Presented & Published in Conferences:

Megha Patil and Basavaraj I Neelgar published a paper titled 'Double Precision Trigonometric Calculator using CORDIC Algorithm' in International Journal of Scientific Research and Review (ISSN-2279-543X), Vol. 8, Issue 5, May 2019.

Monica R B, Ramya T, Sushmitha M S and Tejaswini A N and Anuradha V Rao published a paper on 'Marine Bot using Radar System' in International Journal of Engineering Research & Technology (IJERT), Vol. 8 Issue 05, May 2019

Pavan Kumar M P and Subodh Kumar Panda published a paper titled 'Design and Verification of DDR SDRAM Memory Controller Using SystemVerilog For Higher Coverage' in International Conference on Intelligent Computing and Control Systems [ICICCS 2019], Madurai, India, 15-17 May 2019.

R Ujwala, Poojashree H M, Rachana Y V, Vandana K V and Subodh Kumar Panda published a paper titled 'Design and Implementation of Safety and Health Monitoring System for Women' in International Journal of Computer Sciences and Engineering (E-ISSN: 2347-2693), Vol. 7, Issue 8, Aug 2019

J. Ajay Kumar, Girish P. Kulkarni and Jyoti R Munavalli published a paper titled 'Recent Trends and Developments in Computer Networks: A Literature Survey' in International Journal of Advanced Electronics and Computer Science, Vol. 6, Issue 9, Sept 2019.

Cultural Achievements

Anirudh Aithal of 7th Semester secured 3 gold medals in Classical Vocal, Light Vocal Solo and Indian Group Song in State Level VTU Youth Festival held at SDM College of Engineering, Dharwad from 6th to 9th Nov 2019.

Sonika M and Vishnu N of 5th Semester ECE and Varsha M of 1st Semester secured Bronze medal in Skit in State Level VTU Youth Festival held at SDM College of Engineering, Dharwad, from 6th to 9th Nov 2019.

Sports Achievements

Priyanka P of 5th Semester and team are winners of Y. Nagesh Rao Maanay Memorial Throw ball tournament held on 20th and 21st Sept 2019 at BNMIT.

Sowndarya S of 5th Semester has secured second place in Inter collegiate Table Tennis – Bangalore Central zone tournament held at Atria Institute of Technology, Bangalore on 16th and 17th Nov 2019.

DEPARTMENTAL EVENTS



Signing of MoU between BNMIT and Institute of Health Management Research, Bangalore on 3rd July 2019



Signing of MoU between BNMIT and Rajarajeshwari Medical College and Hospital on 23rd Oct 2019



Team of Flagship Project - 'Bhageerathi' with BNMIT dignitaries and industry delegates on 20th Sept 2019



Winners of Project Champion Award for the project: 'Mobile charging by coin insertion' in IPL Summer Competition 2018-19



Mr. Mohan H. M of Digital Shark Technology during SDP on 'Embedded System Design & its Applications' during July-Oct 2019



Participants of Workshop on 'IoT using Raspberry Pi' during 20th -21st Sept 2019



Dr. Shailesh Kumar Shivakumar, Mindtree Ltd, Delivering a talk during FCD Function on 2nd Nov 2019



Sri. Prasanna Harihar Interacting with the students during Talk on Project Management on 16th Oct 2019



Inaugural function of FDP on "IoT Based Project Design and Development" on 24th June 2019



Participants of FDP on "IoT Based Project Design and Development" during 24th -29th June 2019



Students at Bharat Heavy Electricals Limited, Electronics Division, Bengaluru during Industrial Visit on 4th Nov 2019



Hands on Session during Workshop on "Ardiuno based IoT using LoRa Technology", under ISTE Students Chapter - BNMIT Conducted on 20th and 21st Sept 2019

EDITORIAL TEAM

FACULTY MEMBERS

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Dr. Rekha P
R. N. Tiwari (Asst. Prof., English)

LAYOUT & DESIGN
Sri. Meiyappa B

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