NATIONAL ENGINEERING COLLEGE

(AN AUTONOMOUS INSTITUTION)

K,R,NAGAR,KOVILPATTI-628503.

EEE NEWSLETTER

December2014

Volume 2 Issue 6

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

CONTENTS

STAFF ACHIEVEMENTS / ACTIVITIES

PUBLICATION:

- **S. Senthil Kumar, M. Willjuice Iruthayarajan and M. Bakrutheen,** paper titled on "**Analysis of Vegetable liquid insulating medium for Application in High Voltage Transformer**", International Conference on "Science, Engineering & Management Research, "ICSEMR 2014", *IEEE Conference Proceedings* held at Vel Tech Multitech, Chennai.
- **M. Sivapalanirajan,** paper titled on "**Power System Design & parameter monitoring for 2U CUBESAT**", International Conference on "Science, Engineering & Management Research, "ICSEMR 2014", *IEEE Conference Proceedings* held at Vel Tech Multitech, Chennai.

S.No.	Name of the Staff	Events/Resource Person	Topic	Date	College
1	Dr.L.Kalaivani, Asso. Prof	MHRD Govt. of India Sponsored Short Term Course	Control System	02.12.2014 – 12.12.2014	Anna University of Technology, Tirunelveli,
2	Mr.T.Sivakumar, AP	TEQIP-II Sponsored Workshop	Recent Trends in Power System Protection	27.11.2014 – 29.11.2014	National Institute of Technology, Warangal
3	Mr.S.Sanakarakumar, AP(SG) and Mr.S.Arun Sankar, AP	Quality Improvement programme, AICTE Govt of India Sponosored Short term course	Advance in Solar Energy Technologies	09.12.2014 - 15.12.2014	Indian Institute of Technology, Delhi
4	Mr.M.Sivapalanirajan, AP	CNNP one day Tutorials	MEMS and Sensors	17.12.2014	Indian Institute of Technology, Chennai
5	Mr.G.Kannayeram, AP (SG), Ms.S.Jeyanthi, AP & Ms.J.R.Deepeeha, AP	AICTE Sponsored Short Term Course	Power Quality Issues & its Mitigation in Smart/Nano Grid Systems	17.11.2014 – 23.11.2014	Coimbatore Institute of Technology, Coimbatore

6	Mr.G.Kannayeram,AP(SG), Ms.S.Divya, AP, Ms.G.Shnmugalakshmi, AP Mr.S.Thirumalaikumar, AP & Mr.T.Sivakumar, AP	Anna University Sponsored Faculty Development Training Program	High Voltage Engineering	08.12.2014 – 14.12.2014	National Engineering College, Kovilpatti
7	Dr.M.Ravindran, Asso. Prof, Mr.M.P.E.Rajamani, AP(SG), Mr.J.Sivadasan, AP (SG), Mr.B.Venkatasamy, AP, Ms.K.Gowthami, AP, Mr.M.Gengaraj, AP, Mr.S.Thirumalaikumar,AP & Mr.M.Sivapalanirajan, AP	Faculty Development Program with PERPETRO Technologies, Chennai	Emerging Technologies with Hands on and Live Demo	11.11.2014 – 15.11.2014	National Engineering College, Kovilpatti
8	Mr.S.Senthilkumar, AP	Workshop	Research Methodology, Techniques of writing Research articles for SCI Journals for Research Scholars	15.11.2014	Anna University, Chennai
9	Dr.P.Subburaj, Professor	**Guest Lecture/** Causes of overvoltage and its Protection	Anna Univesity Sponsored FDP "High Voltage Engineering"	08.12.2014 – 14.12.2014	National Engineering College, Kovilpatti
10	Mrs.R.V.Maheswari, Asso. Prof	**Guest Lecture/** Generation of High Voltages, Insulation Coordination and Bewley's lattice diagram	Anna Univesity Sponsored FDP "High Voltage Engineering"	08.12.2014 – 14.12.2014	National Engineering College, Kovilpatti
11	Mr.M.P.E.Rajamani, AP(SG)	**Guest Lecture/** Condition Monitoring of High Voltage Power Apparatus	Anna Univesity Sponsored FDP "High Voltage Engineering"	08.12.2014 – 14.12.2014	National Engineering College, Kovilpatti
12	Mr.S.Senthilkumar, AP	**Guest Lecture/** High Voltage Testing Techniques	Anna Univesity Sponsored FDP "High Voltage Engineering"	08.12.2014 – 14.12.2014	National Engineering College, Kovilpatti

13	Mr.R.Madavan, AP	**Guest Lecture/** Measurement of High Current and Digital Techniques	Anna Univesity Sponsored FDP "High Voltage Engineering"	08.12.2014 – 14.12.2014	National Engineering College, Kovilpatti
14	Mr.M.Bakrutheen, AP	**Guest Lecture/** Conduction and Breakdown in Liquid and Gaseous Dielectrics & Electrics Field Computation using ANSYS software	Anna Univesity Sponsored FDP "High Voltage Engineering"	08.12.2014 – 14.12.2014	National Engineering College, Kovilpatti
15	Mr.B.Vigneshwaran, AP	**Guest Lecture/** Breakdown in Solid and Composite Dielectrics & Electric Field Computation using ANSYS and COMSOL softwares	Anna Univesity Sponsored FDP "High Voltage Engineering"	08.12.2014 – 14.12.2014	National Engineering College, Kovilpatti

DEPARTMENT ACTIVITIES

ANNA UNIVERSITY CHENNAI SPONSORED SEVEN DAY FACULTY DEVELOPMENT TRAINING PROGRAMME (FDTP)

"EE2353 – HIGH VOLTAGE ENGINEERING"

Department of EEE has organized a seven days faculty development training programme (FDTP) on **"EE2353 – HIGH VOLTAGE ENGINEERING"** during 8th – 14th, December 2014. The scope of the FDTP is to address in the area of High Voltage Engineering to the Faculties of Electrical Engineering in the following aspects.

- Coverage of EE2353 – High Voltage Engineering syllabus.
- Latest advancement in the dielectric, stress analysis, Insulator design.
- Provide practical exposure on high voltage generation, measurement and testing.
- Provides practical exposure about insulation coordination during field visit

Topics covered in 7 days workshop are

- Over voltages in electrical power systems
- Electrical breakdown in gases, solids and liquids

- Generation of high voltages and high currents
- Measurement of high voltages and high currents
- High voltage testing & insulation coordination
- Laboratory Courses

The various resource persons are Mr. M. Sivalingarajan, Executive Engineer, TNEB, TANTRANSCO, Mr. T. Pirai Soodi, Assistant Engineer, TNEB, Tuitcorin Thermal Power Stations, Mr. S. Sudalai Muthi, Assistant Engineer, TNEB, Tuticorin Distribution Circle, Ms. S. Sumathi, Assistant Professor , University V.O.C College of Engineering Tuticorin, Dr. R. Rajan Prakash, Assistant Professor, Thiagarajar College of Engineering, Madurai, Ms. P. Sivakami, Prof & Head, Unnamalai Institute of Technology, Kovilpatti, Dr. P. Subburaj, Prof/EEE Ms. R. V. Maheswari,Asso.Prof/EEE Mr. M. P. E. Rajamani, AP(SG)/EEE Mr. S. Senthil Kumar,AP/EEE Mr. R. Madavan, AP/EEE Mr. M. Bakrutheen, AP/EEE and Mr. B. Vigneshwaran, AP/EEE from various Institutions, Industries and Government sectors.

Totally 19 participants from various engineering institutions have participated and benefited by this FDTP. Under the guidance of the Director Dr.Kn.K.S.K.Chockalingam, Principal Dr.S.Shanumgavel, the Coordinators Dr.M.Willjuice Iruthayarajan Prof. and Head/EEE and Ms.R.V.Maheswari Assoc. Prof./EEE, have made elaborate arrangements for this FDTP.

SPECIAL INTEREST GROUP

SHORT TERM LABVIEW TRAINING PROGRAMME ON BASIC CIRCUIT APPLICATIONS – VALEDICTORY FUNCTION

Conducted by: Mr.R. Muniraj, AP (Sr.Grade) / EEE & Mr.M. Sivapalanirajan , AP/EEE

EEE department Special Interest Group (SIG) organized a short term course on the topic "**SHORT TERM LABVIEW TRAINING PROGRAMME ON BASIC CIRCUIT APPLICATIONS**" during the odd semester of the academic year 2014-15.

Mr.Muniraj.R AP (S.G)/EEE as coordinator assisted by **Mr.Sivapalanirajan.M AP/EEE** for this programme. First and foremost, the fundamental concept of LABVIEW and its major tools like control palette, function palette were discussed and also explained the major significance of front panel and block diagram windows of the LABVIEW platform.

Then the basic circuit applications of LABVIEW were conducted in the ODD Saturday (working Saturday) and any three week days [5.15PM to 6.15PM] from 20th September 2014 for 16 Number of II year EEE 'B' section students. The students designed and implemented 10 numbers of exercises based on VI for basic circuit applications which were successfully completed during 20th September 2014 to 10th November 2014.

The Validatory function was arranged at Control and Instrumentation laboratory of our Department on 10th November 2014. Mr.B.Vijaya Shankar Vignesh II year EEE B delivered the welcome speech in the valuable presence of our honorable **Principal Dr.S.Shanmugavel** and our beloved **HOD Dr.M.Willjuice Iruthayarajan.**

Programme coordinator Mr.R.Muniraj presented the detailed report of SHORT TERM LABVEW TRAINING PROGRAMME ON BASIC CIRCUIT APPLICATIONS through the following LABVIEW exercises,

- Arithmetic operation.
- Boolean operation.
- Design using “for” loop and “while” loop.
- Random number analysis.
- Indication of Temperature and level measuring setup.
- Concepts of feedback nodes.
- Mesh analysis.
- Nodal analysis.
- RLC Resonance circuits.

Our Principal Dr.S.Shanmugavel delivered the motivational speech for the students about the real life challenges and ways to equip ourselves for completing global needs. Our HOD Dr.M.Willjuice Iruthayarajan shared the significance of electrical engineers in LABVIEW. Then he conveyed that, this program as an initial attempt by the organizers, for the forth coming events relevant to the applications of LABVIEW with measurements, instruments and control engineering.

Finally our Principal and HOD felicitate the participants by distributing the certificate for the trained students. Ms.S.Vigneshwari II year EEE B delivers vote of thanks for all who provided their support for the successful completion of this event.

Article by Staff Member

FINITE ELEMENT ANALYSIS (FEA) OR FINITE ELEMENT METHOD (FEM)

Ms.S. Divya
Assistant professor
Department of Electrical and Electronics Engineering
National Engineering College

The Finite Element Analysis (FEA) is a numerical method for solving problems of engineering and mathematical physics. It is a numerical technique for solving problems which are described by partial differential equations or can be formulated as functional minimization. A domain of interest is represented as an assembly of *finite elements*.

The advantages of FEA are numerous and important. A new design concept may be modeled to determine its real world behavior under various load environments, and may therefore be refined prior to the creation of drawings, when few money have been committed and changes are inexpensive. Once a detailed CAD model has been developed, FEA can analyze the design in detail, saving time and money by reducing the number of prototypes required. An existing product which is experiencing a field problem, or is simply being improved, can be analyzed to speed an engineering change and reduce its cost. The method has wide application and enjoys extensive utilization in the structural, thermal and fluid analysis areas.

It is also important to recognize the limitations of FEA. Commercial software packages and the required hardware, which have seen substantial price reductions, still require a significant investment. The method can reduce product testing, but cannot totally replace it. Probably most important, an inexperienced user can deliver incorrect answers, upon which expensive decisions will be based. FEA is a demanding tool, in that the analyst must be proficient not only in elasticity or fluids, but also in mathematics, computer science, and especially the finite element method itself.

To summarize in general terms how the finite element method works:

1. ***Discretize the continuum:*** The first step is to divide a solution region into finite elements. The finite element mesh is typically generated by a preprocessor program. The description of mesh consists of several arrays main of which are nodal coordinates and element connectivity.

2. ***Select interpolation functions:*** Interpolation functions are used to interpolate the field variables over the element. Often, polynomials are selected as interpolation functions. The degree of the polynomial depends on the number of nodes assigned to the element.

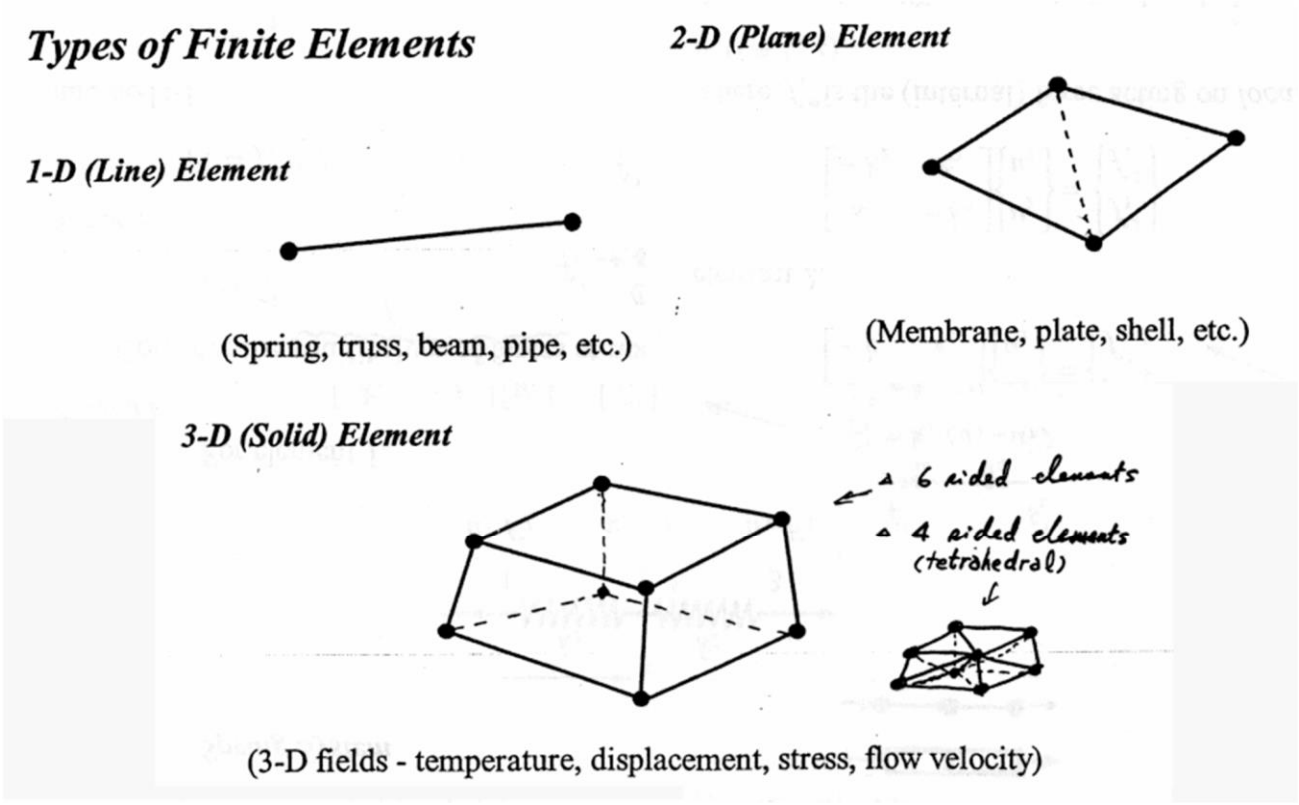
3. ***Find the element properties:*** The matrix equation for the finite element should be established which relates the nodal values of the unknown function to other parameters. For this task different approaches can be used; the most convenient are: the variation approach and the Galerkin method.

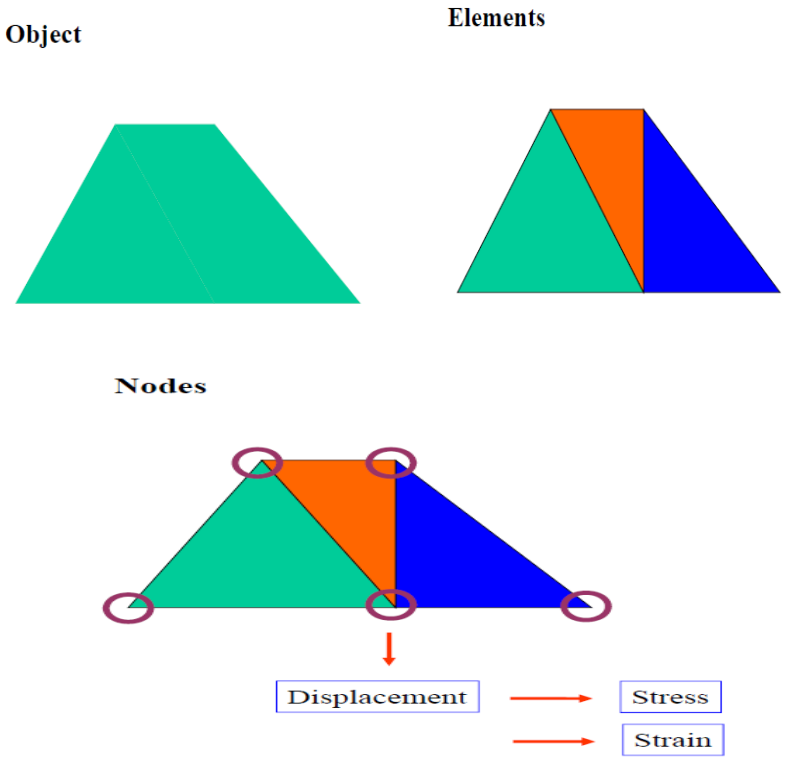
4. ***Assemble the element equations:*** To find the global equation system for the whole solution region we must assemble all the element equations. In other words we must combine local element equations for all elements used for discretization. Element connectivity are used for the assembly process. Before solution, boundary conditions (which are not accounted in element equations) should be imposed.

5. ***Solve the global equation system:*** The finite element global equation system is typically sparse, symmetric and positive definite. Direct and iterative methods can be used for solution. The nodal values of the sought function are produced as a result of the solution.

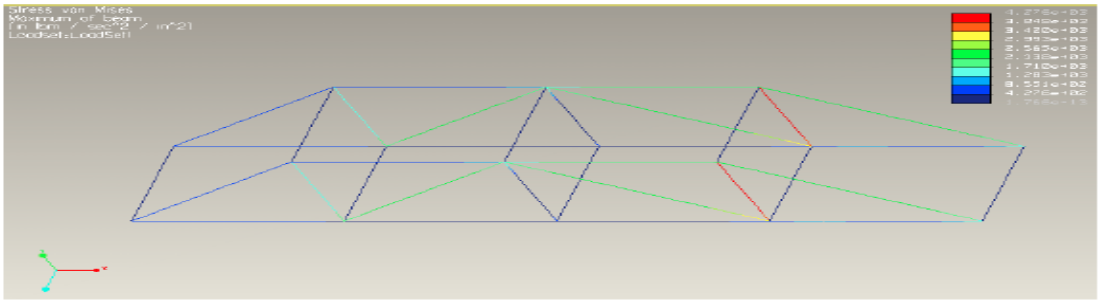
6. ***Compute additional results:*** In many cases we need to calculate additional parameters. For example, in mechanical problems strains and stresses are of interest in addition to displacements, which are obtained after solution of the global equation system.

7. **Discretizations :** Model body by dividing it into an equivalent system of many smaller bodies or units (finite elements) interconnected at points common to two or more elements (nodes or nodal points) and/or boundary lines and/or surfaces

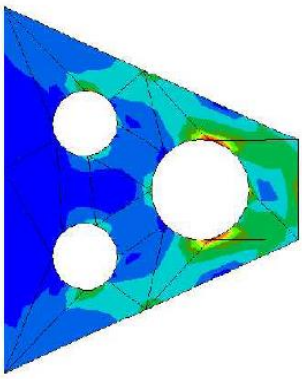




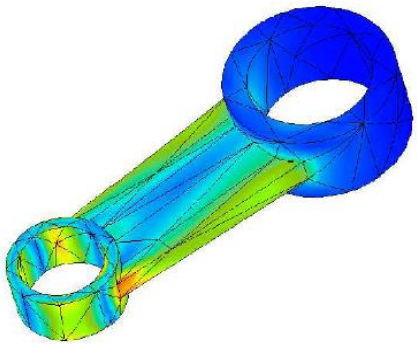
Examples of FEA – 1D (beams)



Examples of FEA - 2D



Examples of FEA – 3D



A GENERAL PROCEDURE FOR FINITE ELEMENT ANALYSIS

Preprocessing

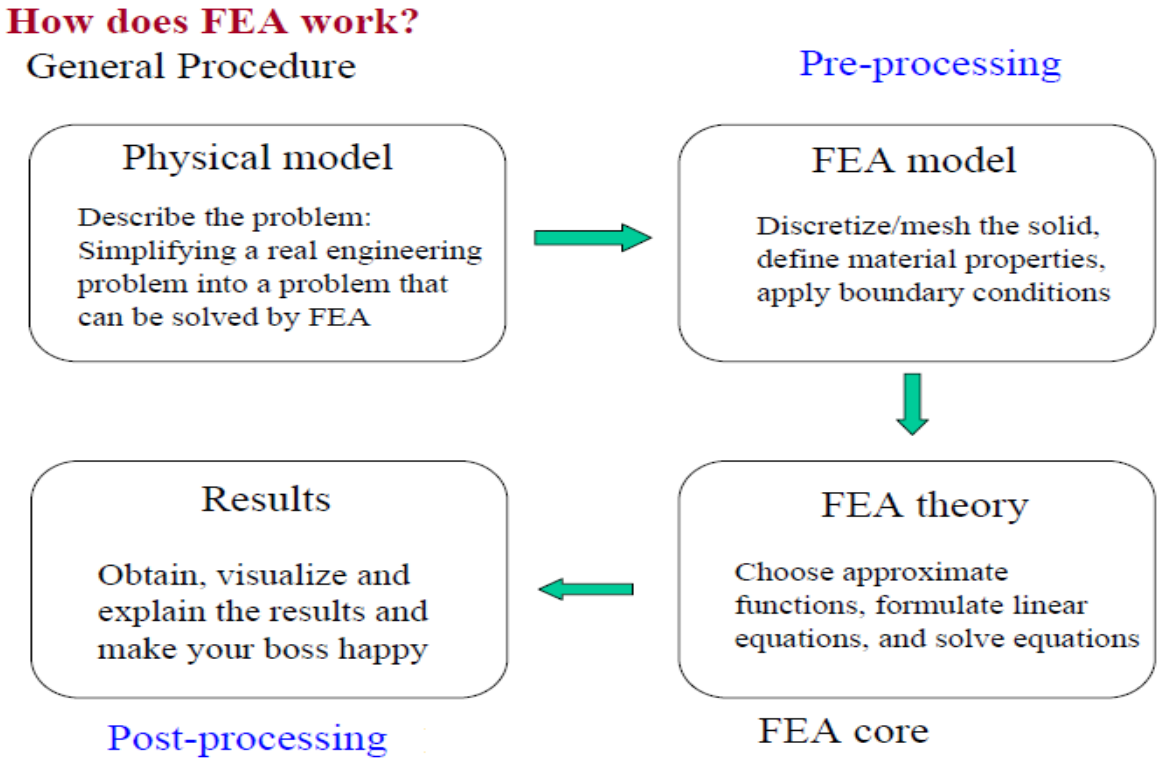
- Define the geometric domain of the problem.
- Define the element type(s) to be used.
- Define the material properties of the elements.
- Define the geometric properties of the elements (length, area, and the like).
- Define the element connectivity's (mesh the model).
- Define the physical constraints (boundary conditions). Define the loadings.

Solution

- Computes the unknown values of the primary field variable(s)
- Computed values are then used by back substitution to compute additional, derived variables, such as reaction forces, element stresses, and heat flow.

Post processing

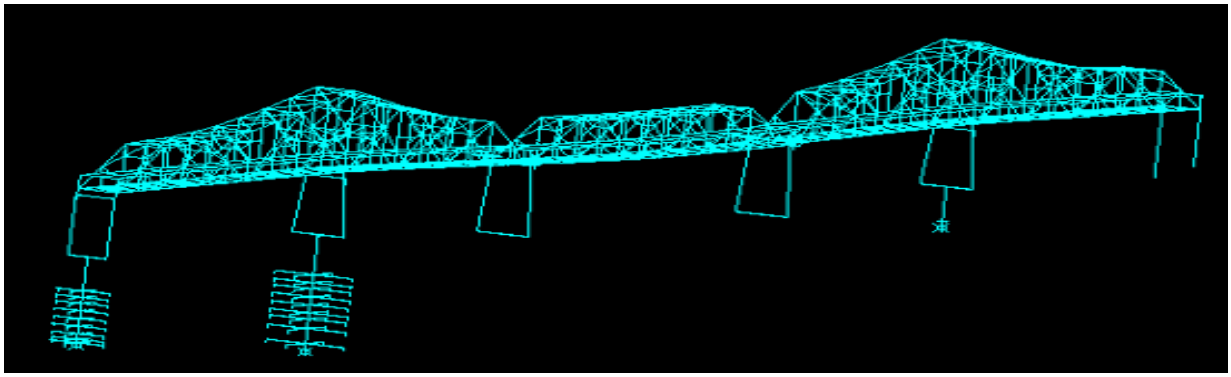
- Postprocessor software contains sophisticated routines used for sorting, printing, and plotting selected results from a finite element solution.



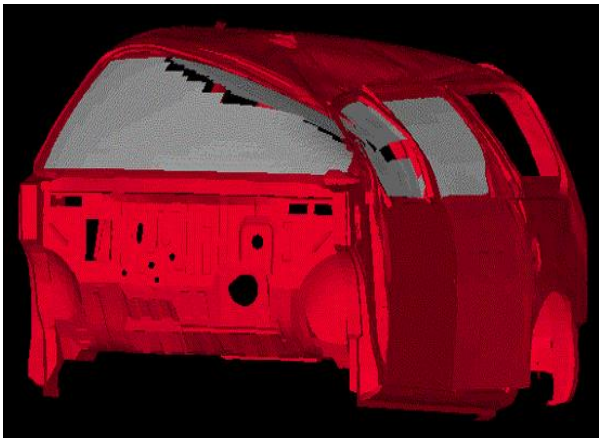
Examples of FEA

1. **FEM simulation of the damage of San Francisco Oakland Bay Bridge caused by the 1989 Loma Prieta earthquake.**

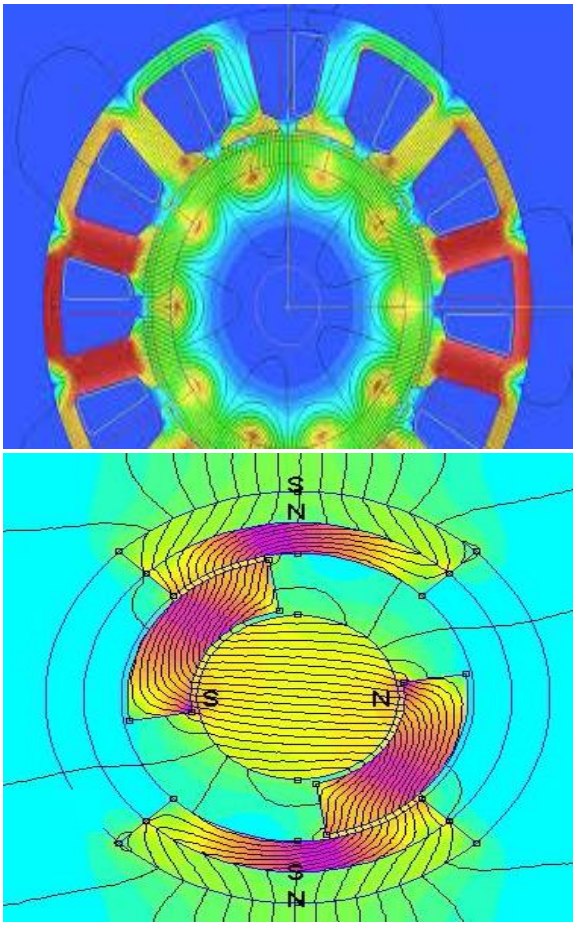




2. FEM simulation of crush of a car in roll-over situation.

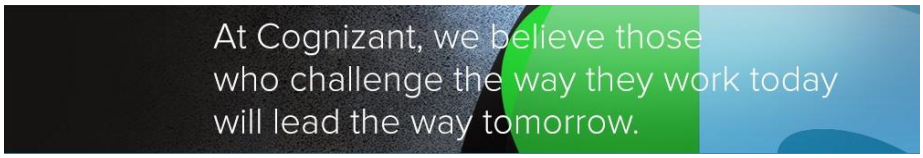



3. FEM simulation of electrical machines.



In summary, the finite element method is a relatively recent discipline that has quickly become a mature method, especially for structural and thermal analysis. The costs of applying this technology to everyday design tasks have been dropping, while the capabilities delivered by the method expand constantly. With education in the technique and in the commercial software packages becoming more and more available, the question has moved from "Why apply FEA?" to "Why not?". The method is fully capable of delivering higher quality products in a shorter design cycle with a reduced chance of field failure, provided it is applied by a capable analyst. It is also a valid indication of thorough design practices, should an unexpected litigation crop up. The time is now for industry to make greater use of this and other analysis techniques.

Placement Details



On behalf of Chairman, Managing Director, Director, Principal, Head of the Department and staff members, we heartily congratulate the following final year EEE students who placed in Cognizant Technology Solutions (CTS) Campus drive during the month of December 2014.

			
Ms. Ajhita Shry. S.M.K	Ms. Fathima Irfana. K.S	Ms. Krishnaveni. S	Ms. Mariselvi @ Abitha. G
			
Ms Muthulakshmi. M	Mr. Pitchai Kumar Kannan. R	Ms. Rama Sankari. S	Ms. Rizwana Raseena. B

Placement Forum

In this academic year, the even semester placement activities for our department started from December 2014.

Sl.No	Date	Program conducted	Beneficiaries	No of Participants	Handled By
1	16/12/2014	How to face the Placement	IV EEE A & B	40	English Dept (S&H)
2	18/12/2014 19/12/2014	Preparation for CTS campus interview	IV EEE A & B	40	FACE

The cadence private ltd company recruitment was held at our campus on 20/12/2014. Nearly 80 students from our department have been taken the written test. The written test comprises of basic circuit theory, digital logic circuits & linear integrated circuits. The following 7 students have cleared the written test.

M.Revathi, B.Rizwana Raseena, P. Shree Uthra, V.Marirajan, S.V.Vignesh, S.Ahamed Ibrahim and M.Veera senthil

The second round was technical problems. The students have been given with 10 problems. The time duration was half an hour. The following 3 students have cleared the technical problems round and attended the final HR round on 21/12/2014

S.V.Vignesh, V.Mari rajan, M.Veera senthil

The students are awaiting for their result.

Then the Cognizant Technology Solution interview was held at Kongunadu College of Engineering & Technology, Namakkal, on 23/12/2014 & 24/12/2014 as a part of Anna University State level Placement Program. Nearly 37 students have participated the Group discussion in first round on 23/12/2014. 34 students have cleared the GD and moved to written exam. The following 15 students have cleared the written exam.

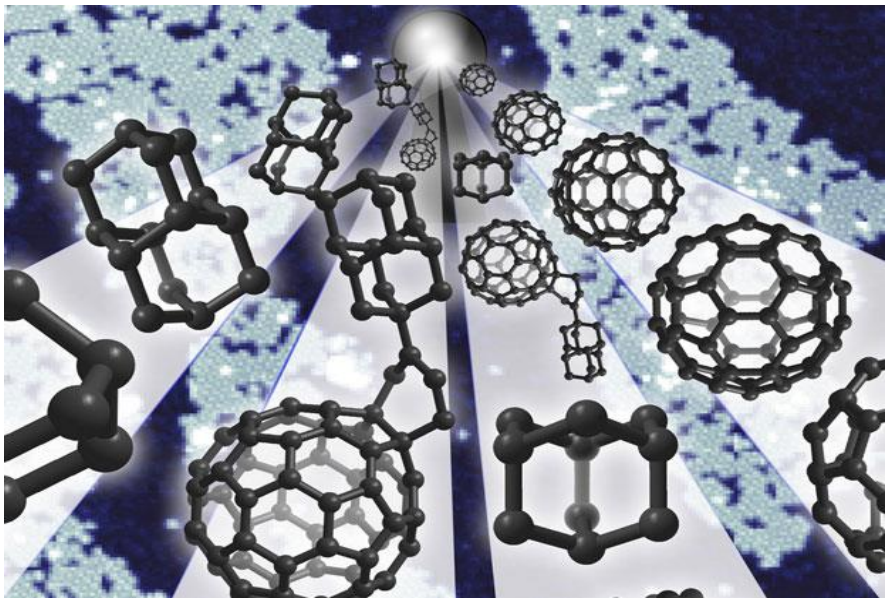
S.Aswini, M.Muthu lakshmi, N.Akila, C.Ganesh Kumar, K.S.Fathima Irfana, S.M.K.Ahjitha shry, G.Mariselvi @ Abitha, S.Rama Sankari, S.Sam Chandrasekar, B.Rizwana Raseena, K.Sivaranjani, R.Thirumani Krishnasamy, S.Krishnaveni, R.Pitchai Kumar Kannan and S.Abinaya

Out of which 8 students have cleared the technical round and got placed in CTS.

M.Muthu lakshmi, K.S.Fathima Irfana, S.M.K.Ahjitha shry, G.Mariselvi @ Abitha, S.Rama Sankari, B.Rizwana Raseena, S.Krishnaveni and R.Pitchai Kumar Kannan

Technical Articles by Students

IS THE "BUCKYDIAMONDOID" THE FUTURE OF MOLECULAR ELECTRONICS?



What happens when you combine a buckyball with a diamondoid? As it turns out something wonderful for the prospects of molecular electronics. In fact, you get a new kind of material that conducts electricity in just one direction.

This conducting of electricity in one direction is the role of rectifiers, which take the form of diodes in computer chips. By shrinking these diodes down to the size of a nanoparticle it could shrink chip size while making devices faster and more powerful.

In research which demonstrated that a single layer of diamondoids on a metal surface can efficiently emit a beam of electrons. Diamondoids are molecules found in petroleum that have the basic chemical structure of diamonds, but are coated on the outside in hydrogen molecules.

The researchers discovered that the buckyball and diamonoid hybrid, dubbed a 'buckydiamonoid', allowed electrical current to flow through it up to 50 times stronger in one direction, from electron-spitting diamondoid to electron-catching buckyball, than in the opposite direction.

Although this is not the first molecule-size rectifier ever developed, it does mark the first time one has been constructed solely from carbon and hydrogen. The researchers are going to see if they can make the transistors from the same two materials.

"Buckyballs are easy to make they can be isolated from soot and the type of diamondoid we used here, which consists of two tiny cages, can be purchased commercially," said by researcher."And now that our colleagues in Germany have figured out how to bind them together, others can follow the recipe. So while our research was aimed at gaining fundamental insights about a novel hybrid molecule, it could lead to advances that help make molecular electronics a reality."

- ***Bavithra. R, Second yr 'A'***

PERSONALITY TO KNOW

GUSTAV ROBERT KIRCHHOFF

Gustav Robert Kirchhoff (12 March 1824 – 17 October 1887) was a German physicist who contributed to the fundamental understanding of electrical circuits, spectroscopy, and the emission of black-body radiation by heated objects. He coined the term "black body" radiation in 1862, and two different sets of concepts (one in circuit theory, and one in spectroscopy) are named **"Kirchhoff's laws"** after him; there is also a Kirchhoff's Law in thermochemistry. Kirchhoff easily derived Kirchhoff's voltage law for electrical network analysis between 1845-1846, while he was still a student at Konigsberg. In 1849, following the experiments of Kohlrausch, he introduced Kirchhoff's current law for electrical network analysis. Kirchhoff's first law is that algebraic sum of currents in a network of conductors meeting at a point (or node) is zero. The second law is that in closed circuit, the directed sums of the voltages in a closed system is 0. He graduated in 1847. Three years later, he was appointed professor at Breslau.

In 1859, he published an explanation of the dark lines in the sun's spectrum, discovered by Josef von Fraunhofer. In the course of investigating the optical spectra of chemical elements, Kirchhoff made his major contribution to science which was his experimental discovery and theoretical analysis of a fundamental law of electromagnetic radiation which states that for all material bodies, the ratio of absorptive and emissive power of radiation is a universal function of wavelength and temperature. In 1860, Bunsen and Kirchhoff discovered that each chemical substance emits light that has its own unique pattern of spectral lines. A Few months later, they discovered a new metal, cesium and the next year, they found rubidium. They also constructed an improved form of the spectroscope. Later, Queen Victoria of England had presented Kirchhoff with a medal for work on the sun's spectrum. He also received Rumford medal in 1862, Davy Medal in 1877.

Kirchhoff was crippled by an accident in mid-Life which compelled him to use crutches and wheelchair. But, he remained in good spirit. Only when his failing health hindered his experimental work did he accept a chair of theoretical physics offered to him in Berlin. He worked there with great devotion, until illness forced him to give up his teaching activity in 1886. He bore with patience the long illness of his last years. He died peacefully, presumably of a cerebral congestion.

- M. Pranava Karthikeyan (Prefinal Year EEE)

TIME TO KNOW OUR ALUMNI

MUTHU SENTHIL KUMAR
Business Laws

E-mail ID: *mskumar.patent@gmail.com*
Contact: +91-9003242037
Current Status: Patent Analyst
Batch: *2003 – 2007*

EDUCATIONAL QUALIFICATIONS

DEGREE	SPECIALIZATION	YEAR OF PASSING	INSTITUTE	Grade / %
MBL	Business Laws	2011-2013	**Distance Education**, NLSIU, Bangalore	Grade A
MBA	Technology Management	2008-2010	**Distance Education**, Anna University, Chennai	67
BE	Electrical and Electronics Engineering	2003-2007	National Engineering College, Kovilpatti	77 (Distinction)

EXPERIENCE DETAILS

Experience – 7+ Years

(A) From November 2011 to Till Date (3+ Years)

*Organization: **TVS Motor Company Ltd**, Hosur, Tamil Nadu www.tvsmotor.in*
Designation: Asst.Manager – R&D

Duties and Responsibilities:

- Patentability search (Novelty search)
- Freedom to operate (FTO) search and prior art search
- Infringement analysis, claim mapping and invalidation search
- Patent landscape preparation for new technologies and competitor products
- Searching solutions for technical problems through expired patents
- Preparation for guidelines for non-infringing towards competitors products
- Patent drafting and filing
- IP portfolio management
- Drafting reply to the examination reports
- To support external attorneys for patent litigation

(B) From August 2010 to October 2011 (1.2 Years)

*Organization: **Zoho Corporation India Pvt Limited**, Chennai, India.*
Designation: Patent Engineer – Legal

- Duties and Responsibilities:
- Patentability and FTO search (Novelty search)
- Patent prior art search and analysis
- Infringement Search, claim mapping and licensing
- Discuss with Inventors to organize their invention disclosures
- Patent drafting and filing
- To support attorneys for prosecution and legal complaints
- Market research for competitor products

(C) From June 2007 to August 2010 (3.1 Years)

*Organization: **Tata Elxsi Limited**, Bangalore, India. www.tataelxsi.com*
Designation: Design Engineer – Technology innovation & Patenting

- Duties and Responsibilities:
- Patentability and FTO search (Novelty search)
- Patent prior art search and analysis
- Infringement search for new proposals to the customer
- Patent drafting and filing

Expertise

• ***Innovation*** – Involve making of technical and commercial innovation ideas from various engineering fields and to represent that in pictorial and presentation format. He is one of the **Inventor for 6 Indian Patents** filed by my Assignee (Tata Elxsi Limited)

• ***Patents***

Prior Art Search - **Conducted over 140+ prior art searches** including novelty search, Freedom to operate search, infringement search and claim mapping in the field of Automobile, Mechanical, Electronics, Communication, Networking, Internet Enabled Devices, Mobile Technology, Automation, semiconductor systems, software products etc.

Patent Analysis - Have done background information and prior art patent analysis for new development ideas and customer proposals

Patent Drafting – Drafted over **55+ Indian Patent applications** (complete specifications) in various engineering domains.

Patent Litigation – To provide an in house support and organize litigation and prosecution activities to the external attorneys

Product and Market information – Product and market analysis for new innovations of competitors and creating landscapes

Handled Patent Databases

• Thomson Innovation, Micropat, Delphion, Cipis, Relecura, WIPS and other commercial patent databases
• Espacenet, USPTO, WIPO, Indian Patent search and other non-commercial databases
• Freepatentsonline, patentstorm and other web based databases

Technical Articles

Patent Related:

1. Art of Understanding the Patent, **Electronics for You**, July 2009 Edition
2. Art of Understanding the Patent for Non Patentees, Ezine Articles
3. A Guide to Think an Idea for Patent, Articles base
4. Discussions and Suggestions about Patent Issues, Ezine Articles
5. Indian Patent System and Procedures Articles base
6. Indian Patent Examining after filing Patent, Articles base

Others:

7. Design and Implementation of SSD Technology, **ECN Asia**
8. Hardware Used in Storage Backup and Recovery, Ezine Articles
9. Hard disc Fundamentals, Ezine Articles
10. Computer Storage options today and Tomorrow, Ezine Articles
11. Hard Drive Failures: Causes and Difference, Articles base
12. Today's Solid State Disks and Attributes of Solid State Drives, Articles base
13. Causes of SSD are not used for Laptops and PCs, Articles base
14. Components of Solid State Drive (SSD), Articles base
15. Working Flow of Solid State Drive (SSD), Articles base

DO IT!!! KNOW IT!!!

A. Anto Sharon Prakash - Prefinal Year

STATION WITH A NOBLE DEED

INTRODUCTION:

Just remember our vacation days. We would be very happy. We would feel that we are flying in the sky. We would also plan lot of journeys to our relatives home, our friends home, picnic or some other places. We would be just fond of travelling long routes. These journeys widen our boundaries. During these journeys we are likely to come across several industries, electricity boards, etc. In these industries and electricity boards we would have seen heavy and high towers carrying huge number of wires. We would be amazed in such type of construction. Our mind naturally arises a question, from where, these wires receive power? and when we are answered our ears would hear "from substation". How can these substations supply such large power and how does it work? To know this let us try to do the following simple project. For that we require,

1. Copper bars
2. Wires
3. Step down transformers-2
4. Load
5. Insulators

SELECTION:

We are living in an earth where each and everyone is dependent on another. We have to share what we have, to make others and us happy. Sharing is one which not only makes the person receiving happy but also another i.e giving. The countrymen live in peace, harmony and happy because of the army men sharing their wellbeing for the protection and welfare of the people of the country. To make people improve their attitude of sharing, the noble deed, this project of substation is chosen which shares the power it receives to the consumers according to their needs.

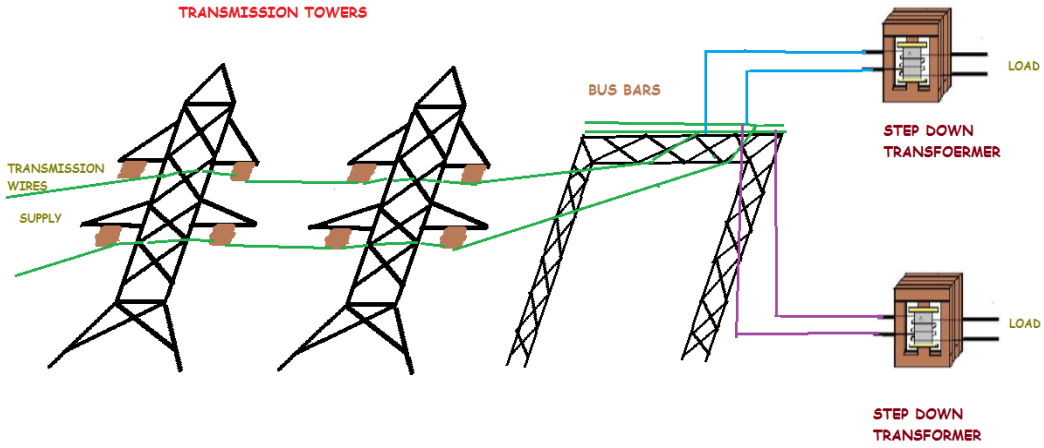
PRINCIPLE BEHIND (written by V.K.Mehta, Rohit Mehta):

The present-day electrical power system is a.c. i.e. electric power is generated, trans mitted and distributed in the form of alternating current. The electric power is produced at the power stations which are located at favourable places, generally quite away from the consumers. It is delivered to the consumers through a large network of transmission and distribution. At many places in the line of the power system, it may be desirable and necessary to change some characteristic (e.g. voltage, a.c. to d.c., frequency, p.f. etc.) of electric supply. This is accomplished by suitable apparatus called sub- station. For example, generation voltage (11 kV or 6·6 kV) at the power station is stepped up to high voltage (say 220 kV or 132 kV) for transmission of electric power. The assembly of apparatus (e.g. transformer etc.) used for this purpose is the sub-station.

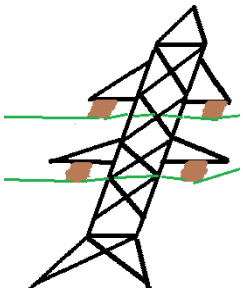
Similarly, near the consumer's localities, the voltage may have to be stepped down to utilisation level. This job is again accomplished by a suitable apparatus called sub- station. Yet at some places in the line of the power system, it may be desirable to convert large quantities of a.c. power to d.c. power .This job is again performed by suitable apparatus (e.g. ignitron) called sub-station. It is clear that type of equipment needed in a sub-station will depend upon the service requirement. Although there can be several types of sub-stations, we shall mainly confine our attention to only those sub-stations where the incoming and outgoing supplies are a.c. i.e. sub-stations which change the voltage level of the electric supply.The assembly of apparatus used to change some characteristic (e.g. voltage, a.c. to d.c., frequency, p.f. etc.) of electric supply is called a sub-station.

(Image source:www.epcworld.in)

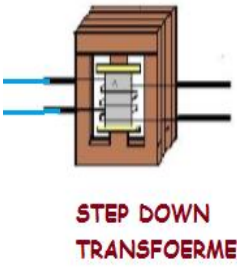
MODEL:



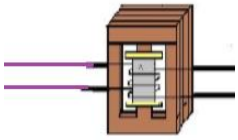
MODEL COMPONENTS EXPLANATION:



Up to date there is no wireless transmission of electrical energy. It is transmitted through wires. As it has to be transmitted to long distances from generating station, the wires need supporting towers.



Used to supply bulk consumers having very high voltage.



STEP DOWN
TRANSFORMER

Used to supply our home and normal loads. Usually has low voltage when compared to bulk consumer.

BUS BARS

Bus Bars are used for parallel operation. So the continuity of service is ensured even in case of failure.

NOTE:

1. The substation utilized here is distribution side substation.

2. The transmission end substation steps up the voltage.

Students Achievements

Second Year 'A'

SL.NO	NAME	EVENT	VENUE	REWARDS	DATE
1	A. Amala Annie	Energy Conservation Rally	Tuticorin	Participation	18/12/2014

Second Year 'B'

SL.NO	NAME	EVENT	VENUE	REWARDS	DATE
1.	M.Sudha, M.Venipriya, S.Vigneshwari	Ball-Badminton	Excel Engineering College, Namakkal	Winner(Zonal)	07/12/2014
				Participation (Interzonal)	13/12/2014
2	S.Uma Devi, T.Viniza, N.Selvakarthika, T.Titus Paul	Energy Conservation Rally	Tuticorin	Participation	18/12/2014

Third Year 'A'

S.NO.	STUDENTS NAME	EVENT	VENUE	REWARDS	DATE
1.	K.Arun Kumar	Hockey Zonal Tournament	National Engineering College, Kovilpatti	Participation	12/12/2014

INPLANT TRAINING			
SL.NO	**NAME**	**VENUE**	**DATE**
1	G.K.Archana Dharsini	Valuthur Gas Turbine Power Station, Ramanathapuram	09/12/2014 - 16/12/2014
2	R.Muthu Karthik	L&T Switchgear Training Centre, Coonoor	17/12/2014 - 19/12/2014

Third Year 'B'

SL.NO.	NAME	EVENT	VENUE	REWARDS	DATE
1.	R.Sneha	Ball-Badminton Zonal	V.V. College Of Engineering, Tirunelveli	1st Prize	6/12/2014 & 7/12/2014
2.	P.Shanmugam	Half-Marathon(10km) Zonal	P.S.N. Engineering College, Tirunelveli	4th Prize	25/10/2014
3.	K.Narayanan, M.Naveen Lingam, P.Shanmugam	Hockey Zonal Tournament	National Engineering College, Kovilpatti	Participation	12/12/2014

INPLANT TRAINING			
SL.NO	**NAME**	**VENUE**	**DATE**
1	M.Pradeep	Rajapalayam Mills Ltd., Raja	09/12/2014 - 12/09/2014
2.	R.S.Saravana Kumar, S.Pandiaraj, A.Praveen Balaji, M.S.Pranava Kartikeyan	L&T Switchgear Training Centre,Coonoor	17/12/2014 - 19/12/2014

Final Year

SL.NO	NAME	EVENT	VENUE	REWARDS
1.	J.Inancia	Volleyball	Dr.G.U.Pope College Of Engineering,Tuticorin	Participation

CRACK GATE

1. Roots of the algebraic equation $x^3+x^2+x+1=0$ are

(A) (+1, +j,-j) (B) (+1,-1, +1) (C) (0, 0, 0) (D) (-1, +j,-j)

2. With K as a constant, the possible solution for the first order differential equation $dy/dx=e^{-3x}$ is?

(A) $-1/3\ e^{-3x}+K$ (B) $-1/3\ e^{3x}+K$ (C) $1/3\ e^{-3x}+K$ (D) $-3e^{-x}+K$

3. A 4 – point starter is used to start and control the speed of a

(A) DC shunt motor with armature resistance control

(B) DC shunt motor with field weakening control

(C) DC series motor

(D) DC compound motor

4. A three-phase, salient pole synchronous motor is connected to an infinite bus. Ig is operated at no load a normal excitation. The field excitation of the motor is first reduced to zero and then increased in reverse direction gradually. Then the armature current

(A) Increases continuously

(B) First increases and then decreases steeply

(C) First decreases and then increases steeply

(D) remains constant

5. The frequency response of a linear system G j(ω) is provided in the tubular form below

$\lvert G(j\omega)\rvert$	1.3	1.2	1.0	0.8	0.5	0.3
$\angle$ G (jω)	-130^0	-140^0	-150^0	-160^0	-180^0	-200^0

(A) 6 dB and 30^0 (B) 6 dB and -30^0 (C) -6 dB and 30^0 (D) -6 dB and -30^0

6. Consider the following statement

(i) The compensating coil of a low power factor wattmeter compensates the effect of the impedance of the current coil.
(ii) The compensating coil of a low power factor wattmeter compensates the effect of the impedance of the voltage coil circuit.
(A) (i) is true but (ii) is false (B) (i) is false but (ii) is true (C) Both (i) and (ii) are true (D) both (i) and (ii) are false

7. A low – pass filter with a cut-off frequency of 30Hz is cascaded with a high-pass filter with a cut-off frequency of 20Hz. The resultant system of filters will function as
(A) an all-pass filter (B) an all-stop filter (B) an band stop (band-reject) filter (D) a band – pass filter

8. The voltage applied to a circuit is 100 √2 cos (100πt) volts and the circuit draws a current of 10√2 sin (100$\pi t + \pi/4$) amperes. Taking the voltage as the reference phasor, the phasor representation of the current in amperes is
(A) $10\sqrt{2}\angle -\pi/4$ (B) $10\angle -\pi/4$ (C) $10\angle +\pi/4$ (D) $10\sqrt{2}\angle +\pi/4$

9. Given two continuous time signals x(t)= e^{-t} and y(t)=e^{-2t} which exist for t > 0, the convolution z(t) = x(t)* y(t) is
(A) $e^{-t} - e^{-2t}$ (B) e^{-3t} (C) e^{t} (D) $e^{-t} + e^{-2t}$

10. A negative sequence relay is commonly used to protect

(A) an alternator (B) an transformer (C) a transmission line (D) a bus bar

11. For enhancing the power transmission in along EHV transmission line, the most preferred method is to connect a

(A) Series inductive compensator in the line

(B) Shunt inductive compensator at the receiving end

(C) Series capacitive compensator in the line

(D) Shunt capacitive compensator at the sending end

12. An open loop system represented by the transfer function G(s)=$\frac{(s-1)}{(s+2)(s+3)}$ is

(A) Stable and of the minimum phase type

(B) Stable and of the non - minimum phase type

(C) Unstable and of the minimum phase type

(D) Unstable and of non-minimum phase type

13. A dual trace oscilloscope is set to operate in the ALTernate mode. The control input of the multiplexer used in the y-circuit is fed with a signal having a frequency equal to

(A) the highest frequency that the multiplexer can operate properly

(B) twice the frequency of the time base (sweep) oscillator

(C) the frequency of the time base (sweep) oscillator

(D) haif the frequency of the time base (sweep) oscillator

14. Circuit turn-off time of an SCR is defined as the time

(A) Taken by the SCR turn of

(B) Required for the SCR current to become zero

(C) For which the SCR is reverse biased by the commutation circuit

(D) For which the SCR is reverse biased to reduce its current below the holding Current

15. A lossy capacitor $C_{x,}$ rated for operation at 5 kV, 50 Hz is represented by an equivalent circuit with an ideal capacitor Cp in parallel with a resistor $R_{P.}$ The value Cp is found to be 0.102 μ F and the value of Rp = 1.25 MΩ. Then the power loss and tan ∂ of the lossy capacitor operating at the rated voltage, respectively, are

(A) 10 W and 0.0002 (B) 10 W and 0.0025 (C) 20 W and 0.025 (D) 20 W and 0.04

ANSWERS:

1.(D) 2.(A) 3.(A) 4.(B) 5.(A) 6.(B) 7.(D) 8.(B) 9.(A) 10.(A) 11.(C) 12.(B) 13.(C) 14.(C) 15.(C)

EEE NEWSLETTER

PATRON

Thiru K.R.Arunachalam, Member, Managing Committee

CO-PATRONS

Dr.Kn.K.S.K.Chockalingam, Director

Dr.S.Shanmugavel, Principal

CONVENOR

Dr. M. Willjuice Iruthayarajan, Professor & Head/EEE

STAFF ADVISORY COMMITTEE:

1. Mrs. R.V.Maheswari, Associate Professor/EEE
2. Mr. B.Vigneshwaran, Assistant Professor/EEE
3. Mr. S. Thirumalai Kumar, Assistant Professor /EEE

EDITORIAL COMMITTEE

EDITORS:

- Mr.A.Venkat Subramanian (Final EEE)
- Mr.N.ArunKumar (Final EEE)
- Ms.A.MuthuMeenaSundari (Final EEE)
- Mr.M.PranavaKarthikeyan (Prefinal EEE)
- Ms.M.Manogari (Prefinal EEE)

REPORTERS:

- Mr.S.Ahamed Ibrahim (Final EEE)
- Mr.K.S.Vignesh (Final EEE)
- Ms.B.Saradha Devi (Final EEE)
- Mr.R.Uma Maheswaran (Prefinal EEE)
- Mr.A.Anto Sharon Prakash (Prefinal EEE)