NATIONAL ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to Anna University, Chennai.)

NEWSLETTER

Volume 1 Issue 3 Sep 2013

ABOUT THE DEPARTMENT:

THe Department of Electrical and Electronics Engineering of National Engineering College is fully Equipped with state of art laboratories and its faculties consists of highly experienced professors, well qualified associative professors and dynamic assistant professors with commitment to give the young minds the very best they deserve.

CONTENTS

VISION & MISSION OF THE DEPARTMENT

VISION:

Promoting active learning, critical thinking coupled with ethical values to meet the global challenges.

MISSION:

1. To instill state-of-the-art technical knowledge and research capability that will prepare our graduates for professionalism and life-long learning.
2. To update knowledge to meet industrial and real world challenges.
3. To inculcate social and ethical values.

PROGRAMME EDUCATIONAL OBJECTIVES (PEO):

The main objective of the B.E., Programme in Electrical and Electronics Engineering is to prepare students for either one or more of the following:

1. Excel in industrial or graduate work in Electrical Engineering and allied fields.
2. Practice their profession conforming to ethical values and active participation in the affairs of the profession.
3. Adapt to evolving technologies and stay current with their profession.

PROGRAMME OUTCOMES (PO):

The students who have undergone the programme will have

1. An ability to apply knowledge of mathematics, physical sciences, and engineering.
2. An ability to design and conduct experiments, as well as to analyze and interpret data.
3. An ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, health and safety, manufacturability and sustainability.
4. An ability to identify, formulate and solve electrical engineering problems.
5. An ability to use the techniques, skills, and modern electrical engineering tools necessary for engineering practice.
6. Develop an understanding of contemporary technical and professional issues in the practice of electrical engineering.
7. The broad education necessary to understand the impact of electrical engineering solutions in a global, economic, environmental, and societal context.
8. An understanding of professional and ethical responsibility.
9. An ability to function on multidisciplinary teams.
10. An ability to communicate effectively in a bi-lingual environment.
11. Recognition of the need for and an ability to engage in life-long learning.
12. An ability to administrate the project management and finance.

SPECIAL INTEREST GROUP

INTELLIGENT CONTROLLERS AND SOFT COMPUTING TECHNIQUES

The Special Interest Group (SIG) on Intelligence and Soft Computing Techniques (ISCT) was conducted on 31/8/2013 (Saturday) by Mrs. L.Kalaivani, (Asso.Prof/EEE) and Mr.J.Sivadasan (AP-Sr.G/EEE). The class was started at 10:30 am. Mrs. L.Kalaivani explained about fuzzy, neural network and evolutionary computation (Genetic algorithm) in soft computing techniques. She made us to understand about the benefits and applications of soft computing. She listed the difference between soft computing and hard computing techniques. Through this we are able to under stand the use of soft computing techniques and also we got some ideas about hybrid intelligence and expert system. After that, Mr.J.Sivadasan explained about neural network and its Applications in realtime situations. The class got over at 12:45 pm. It gave us many information about soft computing techniques and insisted us to do some projects regarding soft computing techniques. Active participation will be there in this Special Interest Group (SIG). On 2/9/2013 Dr.M.Willjuice Iruthayarajan, HOD/EEE conducted a seminar on the topic of "Implementation of Genetic Algorithm". He clearly explained about the basic concept of Genetic Algorithm. The students gained good knowledge in that area and he advised to take some practise in the programms. Also he explained about the future scope for studying the Generic Algorithm. He also described the real time applications based on Generic Algorithm. It gave us many information about Genetic Algorithm and insisted us to do some projects regarding the applications of Genetic Algorithm.

MODELING AND ANALYSIS OF PARTIAL DISCHARGE

A seminar on "Pollution Performance on Insulator" was conducted on 31.08.2013 by Ms.S.Divya, Assistant Professor /EEE at High Voltage Laboratory for Special Interest Group (SIG) members. The topics covered are

1. Necessity of Insulator on Transmission Line
2. Various Types of Insulator
3. Comparing the Performance degradation for Pure and Polluted insulators (Lab session)
4. Explain about how to artificially pollute the Insulator etc.,

A Hands on Training on "COMSOL Multiphysis Software" was handled by Mr.B.Vigneshwaran, Assistant Professor /EEE at Department Computer Center for teaching staff, PG Students and SIG Members. The topics covered are

1. COMSOL Introduction
2. COMSOL Tool Box
3. Analyzing of Electric field and potential distribution of Various Electrodes
4. Practicing about how to model an Insulator (2D) etc.,

LIQUID DIELECTRICS

It is reported that on behalf of Special Interest Groups (SIG) Liquid Dielectrics, Dr.R.Karthik, Associate Professor, had delivered an expert lecturer on 11.9.2013 from 5.00 to 6.30 pm at EEE computer center. The lecture covered the following topics.

1. Critical parameters of liquid dielectrics
2. Diagnostic tools for analyzing the parameters
3. Enhancement methods to improve parameters

He explained the parameters like viscosity, breakdown voltage, fire point, pour point etc. He discussed about the various diagnostic tools available for the testing purpose. Finally he discussed about the enhancement methods like adding nano particles and anti oxidants to improve the critical parameters of the liquid dielectrics.

POWER SYSTEMS

The first Special Interest Group meeting on power systems was held on 31.08.2013. Mr.G.Kannayeram, AP (Sr. Grade) /EEE spoke about the introduction of power systems. Then he explained about Grid and Micro Grid. The students gained a good knowledge about that topics. The students were enriched their knowledge with the information gave by him. The class continued again on 04.09.2013 where he spelled out the importance of SMART GRID, MICRO GRID and NANO GRID. At the end he invoked the students to actively participate in Special Interest Group.

EEE ASSOCIATION

A Workshop on Programmable Logic Controller hosted by Technocrats Automations, Chennai was conducted on 23-8-13 by EEE Association. The session was handled by Mr.Muneeswaren, Project Manager. He then said the improve of learning about the controllers PLC & SCADA. First of all, he explained the drawbacks and the wastage of time and money in a system without controllers. Then he lectured how to overcome those drawbacks and how efficient they are. He quoted out few controllers, explaining how they were in the past and added about their updates. Thus he made clear in the minds of the students how controllers play an innovative role in our day to day life. Afterwards he started his detailed explanation about the basic “Programmable Logic Controllers”. In the afternoon session, KEYENCE software for the students and they were made to work certain problems. The students were greatly benefitted and they were enriched with the basic idea about the controllers. They participated in the workshop with full co-operation and made themselves satisfy through the interaction with the trainer.

INSTITUTE OF ENGINEERS (INDIA)

INAUGURATION REPORT

The Department of Electrical and Electronics was organized an inaugural function of Institution of Engineers (INDIA) on 29.07.2013, 3.30 pm at EEE Computer Center. The function was started with prayer song in the presence of Dr.P.Subburaj (Principal), Dr.M.Willjuice Iruthayarajan (Professor & HOD/EEE), Dr.R.Karthik (Associate Professor), Mr.M.Gengaraj (Assistant Professor), other staff members and students . In that function, welcome address was addressed by Final EEE Mr.T.Karkuvelraja, convener of IE(I) SB-NEC. Final EEE Mr.N.Felix Raja, Student co-ordinator of IE(I) SB-NEC proposed the academic year plan of 2013-2014. Video launch was launched by Dr.P.Subburaj, Principal. Mr.V.Suresh Kumar, Third EEE co-convener of IE(I) SB-NEC introduced the Office bearers for the academic year 2013-2014. Finally the function was concluded with vote of thanks delivered by Final EEE Mr.V.Karthik, Technical organizer of IE(I) SB-NEC.

EVENT REPORT

The paper presentation event of Institution of Engineers (INDIA) was conducted on 21/08/2013, 5.10 pm at EEE Computer Center. The event was exclusively conducted for second and third year EEE students . Totally 38 paper were received from students. After evaluation 10 papers were selected. five papers from Second years and remaining papers from Third years. On 21/08/2013 second years presented their paper, the session continued on 22/08/2013 at same venue for third years. The prize winners for the events were Ms.A.Muthu meena Sundari, Ms.G.Mariselvi@Abitha of 3rd EEE won the First prize. Followed by Ms.B.Rizwana Raseena, Ms.C.Sridevi of 3rd EEE got the Second prize. The Third prize was got by Mr.P.Shanmugam, Mr.M.Subbiah of 2nd EEE.

The Quiz event was conducted on 04/09/2013. 40 interested students (20 groups) registered their name for participating the preliminary Quiz competition. After preliminary, 12 students (6 groups) were selected . The Main level Quiz (Finals) competition was conducted on 06/09/2013. The prize winners of the event were Mr.R.Muneeswaran, Mr.M.Gurusamy 2nd EEE won the First prize. Followed by Ms.G.Mariselvi@Abitha, Ms.B.Mahiba cathline 3rd EEE got the second prize. The Third prize was got by Ms.A.Muthu Meena Sundari , Ms. Vishnu priya 3rd EEE.

The Race To Get Your Hands Off The Wheel

A fleet of cars and drivers whisks visiting journalists around the Frankfurt Motor Show's sprawling, 144-hectare site. Judging by the number of exhibits of self-driving car technology this year, future visitors can expect their courtesy cars to lack drivers. It's a matter of putting together many existing technologies in an affordable, safe system. One piece of that future system nearly clobbered a two-dimensional cutout of a child last week on a fenced-off piece of asphalt outside Hall 10. There, Bosch employees led by Werner Uhler were demonstrating a stereo optical camera system Uhler says could be cheaper than combined radar and optical systems used for collision avoidance today. The device is mounted on the front window of a testbed car, adjacent to the rear-view mirror. As the testbed approached a parked car, Uhler, seated in the backseat, said, "We will drive along...and suddenly a child will turn up and we will brake." That was true.The colorful cutout of a child burst into harm's way from behind the parked car, as promised. The testbed car, moving at 35 kilometers per hour, as per New Car Assessment Program (NCAP) guidelines, slammed the car to a full stop within a few feet of the cardboard child. The NCAP has reported on commercial so-called Emergency Autonomous Braking (EAB) since 2010. In the real world, cars spend a lot of time driving faster than 35 kph and EAB's role is more about damage control than damage avoidance. But sending the cutout child flying, even if it is less distance than a human-driven car would have, might undermine the clear-cut message Bosch and Daimler, and other manufacturers are sending: that they will soon drive your car better than you can. Put another way: future driving software, such as that announced by Audi, won't get bored or distracted in stop-and-go traffic. Autonomous braking is one of a slew of new technologies leading toward what manufacturers call "assisted driving," and "highly automated driving"—or more bluntly, "self-driving cars." But in the last few years, cars entering the market have begun to alert drivers to impending parking accidents, maintain a safe distance from cars ahead of them, and stay in an assigned lane. Solving those will require heavy mathematical lifting, he says. Next door to the Bosch demonstration was a Volkswagen self-parking car, which a frazzled driver might want to buy after, say, a near-miss with an errant child. But on a drizzly day, the car's handlers told me to come back when it was sunny technology on display made him worry about his job security. No, he said, without elaborating. If he's right, chauffeurs and other drivers may become more like today's commercial pilots, overseeing a suite of interacting safety systems.

S.Sudalai Kumar (Final EEE)

Rooftop Solar Faces Growing Opposition from Utilities

Although solar energy is still a midget among U.S. energy sources, its rapid growth from a small base is beginning to make some of the big players nervous. Regulated utilities in a number of states—Arizona, California, Colorado, Idaho and Louisiana—have started to complain about the various benefits for photovoltaics (PV), says Mac Gunther, in a article appearing on Yale's environment360 website. Gunther, a contributing editor at *Fortune*, describes the position of PV in the U.S. energy mix as "puny" or "a mere blip," inasmuch as it accounted for barely one-tenth of 1 percent of U.S. electricity last year. (Coal delivered 37 percent and natural gas 30 percent.) Yet rooftop PV installations jumped nearly 50 percent last year, enough to make some incumbents seriously nervous.

Critics of solar incentives object to the whole panoply of state and Federal subsidies favoring PV, but they particularly object to aspects of "net metering," the requirement that utilities allow distributed generators like owners of rootfop arrays to sell electricity back into the grid. The subject of net metering is a complicated one. In the United Kingdom, which to a great extent inspired the injection of free-market principles into electric power systems, net metering is not generally allowed or encouraged. There, the industry has persuaded regulators that with net metering, distributed generators become, in effect, free riders—they benefit from selling into the grid without bearing their fair share of paying for its maintenance. In the extreme case, a household that always produced excess energy and never bought power from the local utility might pay nothing to support the grid.

In the United States, net metering was required by 2005 Federal energy legislation, but details of implementation vary drastically from state to state. A key issue is whether utilities are required to pay customers selling solar electricity into the grid at wholesale or retail electricity rates. As Rick Tempchin, executive director for retail energy services at the Edison Electric Institute in Washington, D.C. has put it, “Paying credits at the full retail rate costs the utility money because that cost will be higher than the cost that the utility actually avoids by purchasing the distributed generation power. For example, in centralized markets, a utility can buy all of its power needs at the wholesale rate. This rate will always be less than the full retail rate it would have to pay to buy the same power from a customer.”

N.S.Suresh (Final EEE)

Benefits of Implementing FACTS controllers in Indian AC Transmission System

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Abstract— ***The philosophy of FACTS (Flexible Alternating Transmission Systems) is to use power electronics controlled devices to control power flow in transmission network, thereby allowing transmission line systems to be loaded to its full capacity. This technology dynamically controls voltage, impedance and phase angle of high voltage AC transmission lines. The FACTS technologies provide the customer with a flexible solution that has minimal infrastructure investment, low environmental impact as it has no hazardous material, no waste and no pollutants. This technology is efficient for the transmission of voltages up to 500 kV over distances exceeding 2200 km. It increases the quality of supply systems thereby providing financial benefits like increase in transmission capability which leads to additional sales of power and delaying of investments. This paper proposes an investment valuation of installing FACTS devices in India effectively.***

Keywords— ***Extra high voltage (EHV) transmission, More Effective Long-Distance HVDC System, Power System Stability, Transmission efficiency, Improving the capacity of existing systems.***

I. Introduction:

The need for more efficient electricity systems management has given rise to innovate technologies in power generation transmission. Worldwide transmission systems are undergoing continuous changes and restructuring. They are becoming more heavily loaded and are operated in ways not originally envisioned. Flexible AC transmission, FACTS as they are generally known, is new devices that improve transmission systems. Transmission systems must be flexible to react to more diverse generation and load patterns. In addition, the economical utilization of transmission system assests is of vital importance to enable utilities in industrialized countries to remain competitive and to survive. In a developing country like India, the optimized use of transmission systems is also important to support industry, create employment and utilize efficiently scarce economic resources. FACTS is a technology that responds to these needs.

II. FACTS

The concept of FACTS as a total network control philosophy was introduced in 1998 by Dr.N.Hungarian from the Electric Power Research Institute (EPRI) in the USA. The significant impact that FACTS devices will make on transmission systems arises from their ability to affect high speed control. Currently, the main control actions in a power system, such as changing transformer taps, switching current or governing turbine steam pressure, are achieved through the use of mechanical devices, which necessarily impose a limit on the speed at which control action can be made. FACTS devices are based on solid-state control and so are capable of control actions at far higher speed. The three parameters that control transmission line power flow are line impedance and the magnitude and phase of line voltages. Conventional control of these parameters, although adequate during steady-state and slowly changing load conditions, cannot, in general, be achieved quickly enough to handle dynamic system conditions [1]. The use of FACTS technology will change this situation fulfilling the power demand in our country.

III. Need for FACTS in India:

In India, electricity is transmitted at high voltage (110 kV or above) to reduce the energy lost in long-distance transmission. Power is usually transmitted through overhead power line. Underground power transmission has a significantly higher cost and greater operational limitations but is sometimes used in urban areas or sensitive locations. Transmitting electricity at high voltage reduces the fraction of energy lost to resistance, which averages around 7%. For a given amount of power, a higher voltage reduces the current and thus the resistive losses in the conductor. For example, raising the voltage by a factor of 10 reduces the current by a corresponding factor of 10 and therefore the I^2R losses by a factor of 100, provided the same sized conductors are used in both cases. Even if the conductor size (cross-sectional area) is reduced 10-fold to match the lower current the I^2R losses are still reduced 10-fold. Long distance transmission is typically done with overhead lines at voltages of 115 to 1,200 kV. At extremely high voltages, more than 2,000 kV between conductor and ground, corona discharge losses are so large that they can offset the lower resistance loss in the line conductors. Measures to reduce corona losses include conductors having large diameter often hollow to save weight, or bundles of two or more conductors.

One possible way of controlling the load sharing between circuits is by the use of HVDC (High voltage DC) schemes. The power can be electronically controlled by adjusting converter firing angles, it is thus possible to load each circuit separately. However, the use of HVDC schemes is unlikely to be an economic solution to the problem of improving circuit utilization since it requires the installation of costly converter equipment on one circuit and rebuilding of the overhead lines or cables [2].

The use of FACTS technology is a more attractive option since FACTS devices can be fitted retrospectively to existing AC transmission routes, thus providing an economic solution.

IV.Main devices in FACTS

FACTS devices are used for the dynamic control of voltage, impedance and phase angle of high voltage AC transmission lines. The different main types of FACTS devices are described below:

A. Satic Var Compensators (SVC's)

The most important FACTS devices that have been used for a number of years to improve transmission line economics by resolving dynamic voltage problems are SVC's. The accuracy, availability and fast response of SVC's enables them to provide high performance steady state and transient voltage control compared with classical shunt compensation. SVC's are also used to dampen power swings, improve transient stability, and reduce system losses by optimized reactive power control.

Fig. 1- shows the SVC's control unit and the one line diagram of a typical SVC configuration, here employing a thyristor controlled reactor, a thyristor switched capacitor, a harmonic filter, a mechanically switched capacitor and a mechanically switched reactor.

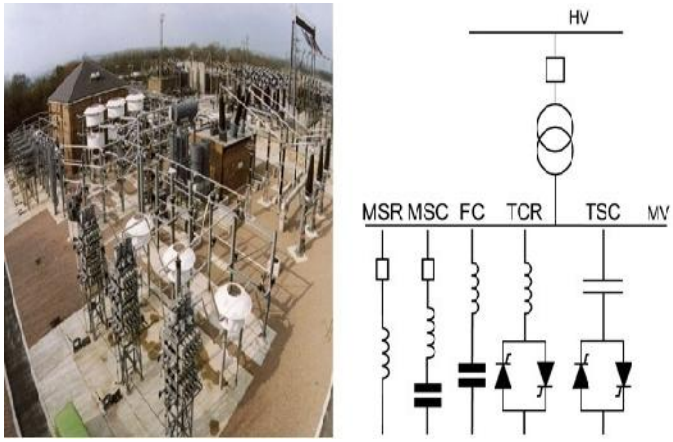

Fig. 1- Fixed and Relocatable SVCs (Static VAR Compensators)

B. MSCDN (Mechanically Switched Capacitors with Damping Networks)

This is a proven technology to provide a switchable source of reactive power to stabilize low frequency voltage variations [3].

Fig.2- shows the MSCD network in power transmission line and a basic topology of C-Type

filters with a capacitor and a damp network which reduces the steady state power loss.

Fig. 2- Mechanically Switched Capacitors with Damping Network

C. STATCOM (Static synchronous compensator)

Highly dynamic voltage source converter-based compensators which, compared to SVCs, offer improved range of operational voltage, a faster response and a smaller site area.

Fig. 3-shows the figure of STATCOM system in transmission lines and the equivalent circuit of a STATCOM system. The high voltage line is connected with the transformer and GTO(gate turn-off thyristor) converter interconnected with a capacitor.

Fig. 3-Static synchronous compensator

D. Thyristor controlled series compensators (TCSCs):

They are an extension of conventional series capacitors through adding a thyristor-controlled reactor. Placing a controlled reactor in parallel with a series capacitor enables a continuous and rapidly variable series compensation system. The main benefits of TCSCs are increased energy transfer, dampening of power oscillations, dampening of sub-synchronous resonances, and control of line power flow. STATCOMs are GTO (gate turn-off type thyristor) based SVC's. This results in smaller area requirements. An additional advantage is the higher reactive output at low system voltages where a STATCOM can be considered as a current source independent from the system voltage. STATCOMs have been in operation for approximately 5 years.

E. Unified Power Flow Controller (UPFC):

Connecting a STATCOM, which is a shunt connected device, with a series branch in the transmission line via its DC circuit results in a UPFC. This device is comparable to a phase shifting transformer but can apply a series voltage of the required phase angle instead of a voltage with a fixed phase angle. The UPFC combines the benefits of a STATCOM and a TCSC [4].

V. Benefits of utilizing FACTS devices in India:

A. Better utilization of existing transmission system assets:

In our country, increasing the energy transfer capacity and controlling the load flow of transmission lines are of vital importance especially in de-regulated markets, where the locations of generation and the bulk load centers can change rapidly. Frequently, adding new transmission lines to meet increasing electricity demand is limited by economical and environmental constraints.

FACTS devices help to meet these requirements with the existing transmission systems.

B. Increased transmission system reliability and availability:

Transmission system reliability and availability is affected by many different factors. FACTS devices cannot prevent faults; they can mitigate the effects of faults and make electricity supply more secure by reducing the number of line trips. For example, a major load rejection results in am over voltage of line which can lead to a line trip. SVC's or STATCOMS counter act the over voltage and avoid line tripping.

C. Increased dynamic and transient grid stability:

Long transmission lines, interconnected grids, impacts of changing loads and line faults can create instabilities in transmission systems. These can lead to reduced line power flow, loop flows or even to line trips. FACTS devices stabilize transmission systems with resulting and TCSC higher energy transfer capability and reduced risk of line trips.

D. Increased quality of supply for sensitive industries:

Modern industries depend upon high quality electricity supply including constant voltage, and frequency and no supply interruptions. Voltage dips, frequency variations or the loss of supply can lead to interruptions in manufacturing processes with high resulting economic losses. FACTS devices can help provide the required quality of supply.

E. Environmental benefits:

FACTS devices are environmentally friendly. They contain no hazardous materials and produce no waste or pollutants. FACTS help distribute the electrical energy more economically through better utilization of existing installations there by reducing the need for additional transmission lines.

F. Financial benefits of FACTS devices:

There are three areas were the financial benefits could be calculated relatively easily.

1. Additional sales due to increased transmission capability.
2. Additional wheeling charges due to increased transmission capability.
3. Avoiding or delaying of investments in new high voltage transmission lines or even new power generation.

There are also indirect benefits of utilizing FACTS devices, which are more difficult to calculate. These include avoidance of industries' outage costs due to interruption of production processes (e.g. paper industry, textile industry, production of semi conductors / computer chips) or load shedding during peak load times.

VII. Investment costs of FACTS devices:

The investment costs of FACTS devices can be broken down into two categories: (a) the devices' equipment costs, and (b) the necessary infrastructure costs.

A. Equipment costs:

Equipment costs depend not only upon the installation rating but also upon special requirements such as:

- Redundancy of the control and protection system or even main components such as reactors, capacitors or transformers.
- Seismic conditions
- Ambient conditions (e.g. temperature, pollution level)
- Communication with the Substation Control System or the Regional or National Control Center.

B. Infrastructure costs:

Infrastructure costs depend on the substation location, where the FACTS devices should be installed. These include

• Land acquisition,
• Modifications in the existing substation (Replace by new components like thyristor valves, auxiliaries etc.)
• Construction of a building for the indoor equipment (control, yard civil works (grading, drainage, foundations etc.)
• Connection of the existing communication.

VIII. Operation and Maintenance of FACTS devices

FACTS devices are normally operated automatically. They can be located in unmanned substations. Changing of set-points or operation modes can be done locally and remotely (e.g. from a substation control room, a regional control centre, or a national control centre.

Maintenance of FACTS devices is minimal and similar to that required for shunt capacitors, reactors and transformers. It can be performed by normal substation personnel with no special procedures.The amount of maintenance ranges from 150 to 250 man-hours per year and depends upon the size of the installation and the local ambient (pollution) conditions.

CONCLUSION

The use of FACTS technology has been recognised superior than the existing system. In many applications the improved future of FACTS brought many advantages in power transmission. There is a vision for a high voltage transmission system around the world – to generate electrical energy economically and environmentally friendly and provide electrical energy where it's needed. This can be surely achieved by FACTS devices. Hence implementing FACTS in India is the key to make this vision live.

ACKNOWLEDGEMENT

We sincerely wish to thank our parents and our professors for their tremendous contribution and support towards the completion of the presentation. We also owe our gratitude to the head of our department. We also show our thanks to all our friends who have contributed in one or other way in the course of the presentation.

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Note: This Paper was selected as BEST PAPER in IE(INDIA) paper presentation contest Conducted on 21.08.2013.

CAME TO KNOW ABOUT OUR ALUMNI

Aswath Ilango. A

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MIDDLE MANAGEMENT PROFESSIONAL

Engineering & Design ~ Project Management ~ Strategy Planning/Project Execution

He Completed his **B.E.(Electrical and Electronics Engg.)** with **78.54% (First Class with Distinction)** through National Engineering College, affiliated to Anna University, Chennai in 2005. A result oriented professional with 8+ years of experience in Switchgear Design, Project Engineering and Project Management in the Power Sector. Currently associated with M/s Alstom T&D India Ltd (formerly M/s Areva T&D India Ltd) as a Project Manager – Substation Automation Systems. Resourceful, proactive project manager with significant experience in directing Substation Protection and Automation projects. Currently he Pursuing Post Graduation in **Operations Management** through **Symbiosis University Pune.**

Thanickachalam Rajagopal, most commonly known amongst as Ajay Rajagopal, is a Management professional, speaker and activist in the fields of self-development, personal freedom and technology. He is an iconic personality, in his own field.

Ajay is an Engineering Graduate in Electricals and Electronics Engineering, from National Engineering College, Kovilpatti, India. He is the pass-out of 1999-2003 Batch. He went on to complete his Masters in Business Administration in Finance and Marketing from the Indian Institute of Planning & Management (IIPM), Chennai, India. Parallel he also attained his Chartered Financial Analyst (CFA) majors an equivalent to CA from the Institute of Chartered Financial Analysts of India (ICFAI), Chennai

India.

He also has certifications like PMI, ITIL, Six-Sigma (basics DMAIC), HIPAA, and HL7 to his name. He is an affiliate member of prestigious institutes like Institute of Management Accountants (IMA - US), Association of Information Technology Professionals (ITP – US), Project Management Institute (PMI – US).

He started his career as a Business Analyst in California Software Company Ltd, Chennai. Then he moved to Xansa India Ltd (the now Steria India Ltd). Later he moved his location to the middle-east and got employed with the prestigious Musandam Group as Group Chief Information Technology Officer. The peak point of his career was when he was absorbed by Microsoft Gulf. He then got promoted as the Vice-President for Corporate Strategy and was a key member in the unveiling of search engine BING. He took a break from his commendable career to return back to India to start his own multi-dimensional organization (Nakshatras) which is now spread out with offices in five locations. In the mean time he also tried his hands on Event Management along with one of his friend.

During his illustrious career he was awarded the 'Best Young Country Head' award for two consecutive years 2008-09, in a joint function held by Microsoft Gulf and The Musandam Group. His work on 'System and Method for Transferring Data' is listed and approved by United States Patent and Trademark Office (USPTO), for which he shares the royalty with Osama Al-Shaykh, Russell Hayashida and Ralph Neff. He is listed in top 250 members to follow in the topic of cloud computing, by Cloud Expo. Presently he is closely associated with author Bryant McGill, helping him with translating his works to Tamil Language.

ALUMNI INTERACTION

The Interaction programme was held on 12.09.2013 at 11.30 am. The final year students interacted with the alumni – Mr.M.Muthu Kumar, Mr.S.Venkatesan, Mr.V.Saravana Kumar and Mr.T.Subha Pranesh. The students cleared their doubts and clarifications about the opportunities apart from the campus recruitment. Mr.T.Subha Pranesh explained the various ways to approach HCL Technologies. and he gave assurance for the job as they got 5 years experience. Mr.S.Venkadesan share his experience about his job in Algeria. Mr.V.Saravana Kumar share his experience about Tele-communication field. Mr.M.Muthu kumar told about various opportunities in our core field. Finally they had a great interaction with students. And they share their contacts for further help.

Details of the alumni as follows:

Name	Passed out	Present Organization	Designation	Location
Mr.M.Muthukmar	2002	Tamilnadu Electricity Board	Assistant Engineer	Velacherry, Chennai
Mr.S.Venkatesan	2002	Petrofac UAE LLC	Electrical Engineer	Algeria
Mr.V.Saravana Kumar	2002	Bharat Sanchar Nigam Limited	Junior Telecom Engineer	Madurai
Mr.T.Subha Pranesh	2002	HCL Technologies	Assistant Consultant	Chennai

Larsen & Toubro Infotech

L&T Infotech (Larsen & Toubro Infotech), a subsidiary of *L&T (Larsen & Toubro)*, is a global IT services and solutions provider company based in Mumbai, India. L&T Infotech is ranked 8 in India IT companies in 2011-2012. The company has 39 registered offices in 22 countries. It employs standards of the Software Engineering Institute's (SEI) Capability Maturity Model (CMM) and is a certified Level 5 organization. L&T Infotech is a global IT services and solutions provider. We provide the winning edge to our clients by leveraging our Business-to-IT Connect and deeply committed people. Our clients include industry leaders like Chevron, Freescale, Hitachi, Sanyo and Lafarge, among others. They have found in us a right-size partner who combines scale, stability and customer-centricity. Our parent company is Larsen & Toubro Ltd. (L&T), a technology, engineering, manufacturing and construction conglomerate, with global operations. This rich corporate heritage has given us many inherent advantages that we translate into tangible benefits for our clients.

- **Headquarters** : L&THouse,BallardEstate,Mumbai 400 001, India
- **Website** : info@Lntinfotech.com
- **Industry** : IT service management, IT service, IT consulting and Engineering / Embedded / R&Ds
- **Type** : Public Company
- **Company Size** : 15,000+
- **Founded** : 1997

Products:

- Banking & Financial Services
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CRACK GATE……

1) If X[n] = (1/3)^|n| - (1/2)^n u[n], then the ROC of Z-transform in the Z-plane will be

a) 1/3 < |Z|<3 b)1/3 <|Z|<1/2
c)1/2<|Z| < 3 d)1/3 <|Z|

2) A System with transfer function G(s) = $\frac{(s^2+9)(s+2)}{(s+1)(s+3)(s+4)}$ is excited by sin(ωt). The steady state Output of the system is zero at

a) ω = 1 rad/sec b) ω= 2 rad/sec
c) ω = 3 rad/sec d) ω=4 rad/sec

3) Given f(Z) = $\frac{1}{Z+1}$ - $\frac{2}{Z+3}$. if C is a counter clockwise path in the Z plane such that |Z+1|=1, the value of 1/ 2πj $\oint f(Z)$ dZ is

a) -2 b) -1 c) 1 d)2

4) If X= $\sqrt{-1}$, then the value of X^x is

a) $e^{-\pi/2}$ b) $e^{\pi/2}$ c) X d)1

5) The average power delivered to an impedance (4-j3) Ω by a current 5cos(100πt+100)A is

a) 44.2 W b) 50 W c)62.5W d) 125W

6) The unilateral laplace transform of f(t) is $\frac{1}{s^2+s+1}$. The unilateral laplace transform of tf(t) is

a) - $\frac{s}{(s^2+s+1)^2}$ b) $\frac{2s+1}{(s^2+s+1)^2}$ c) $\frac{s}{s^2+s+1}$ d) $\frac{2s+1}{s^2+s+1}$

7) A 220v , 15 kw, 1000 rpm shunt motor with armature resistance of 0.25Ω, has a rated line current of 68 A and a rated field current of 2.2 A. the change in field flux required to obtain the speed of 1600 rpm while drawing a line current of 52.8 A and a field current of 1.8 A is

a) 18.18 % increase b)18.18% decrease c)36.36 % increase d) 36.36 % decrease

8) In the sum of products function f(X,Y,Z)= ∑(2,3,4,5), the prime implicants are

a) X'Y,XY' b) X'Y, XY'Z', XY'Z c) X'YZ', X'YZ,XY' d) XYZ,X'YZ,XY'Z

9) Gn that A= $\begin{bmatrix} -5 & -3 \\ 2 & 0 \end{bmatrix}$ and I = $\begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$, the value of A^3 is

a) 15A+12I b)19A+30I c)17A+15I d)17A+21I

10) Consider the $\frac{d}{dt}\left[\frac{dy(t)}{dt}\right] + 2\frac{dy(t)}{dt}$ + Y(t) = $\delta(t)$ with Y(t) at t=0 is -2 and Y(t) at t=0 is 0. The numerical value of y(t) at t= 0 is

a) -2 b)-1 c)0 d)1

11) The input x(t) and output y(t) $\int_{-t}^{t} x(\tau)\cos(3\tau)\,d\tau$. The system is

a) Time-invariant and stable b) stable and not time invariant

C)Time invariant and not stable d) not time invariant and not stable

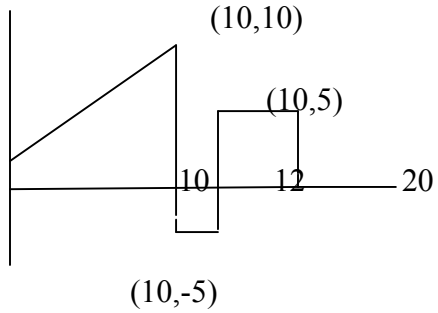
12) Raju has 14 currency notes in his pocket consisting of only Rs.20 notes and Rs.10 notes . the Total money value of the notes is RS.230. the no of RS.10 notes that raju has

a) 5 b)6 c)9 d)10

13) Two independent random variables X and Y are uniformly distributed in the interval [-1,1]. The probability that max[X,Y] is less than ½ is

a) 3/4 b)9/6 c)1/4 d)2/3

14) A periodic voltage waveform observed on an oscilloscope across a load is shown. A PMMC meter connected across the same load reads



a) 4v b)5v c)8v d)10V

15) If R = 5 ohm the approximate Power consumption in the load is

a) 700 W b)750 W c) 800 W d)850 W

16) G(s) is a lead compensator if

a) a=1,b=2 b)a=3,b=2 c)a=-3,b=-1 d) a=3,b=1

17) The phase of the lead compensator is maximum at

a) √2 rad/s b)√3 rad/s c)√6 rad/s d) 1/√3 rad/s

18) $(1.001)^{1259} = 3.52$ and $(1.001)^{2062} = 7.85$, then $(1.001)^{3321}$=

a) 2.23 b)4.23 c)11.37 d)27.64

EXPLANATION:

1) OPTION A

X(n)= (1/3)^|n| - (1/2)^n + U(n) = (1/3)^n u (n)+(1/3)^-n u(-n)- (1/2)^n u(n)

ROC: |Z|>(1/3) |Z|<3 |Z|> (1/2)

COMMON ROC : 1/2 <|z|<3

2) OPTION C

$|G(S)|= \frac{(9-\omega^2)\sqrt{4-\omega^2}}{\sqrt{\omega^2+1}\sqrt{\omega^2-9}\sqrt{16+\omega^2}} = 0$;

$\omega = 3$ rad/s

3) OPTION C

$1/ 2\pi i \oint f(z)dz= 1/ 2\pi i \left[\oint \frac{1}{(Z+1)dz} - \oint \frac{Z}{(Z+3)dz}\right]$

Z=-1 is singularly in c and z=-3 is not in c . By cachy's integral formula $b=\oint \frac{Z}{(Z+3)dz} = 0$

$a= \oint \frac{1}{(z+1)dz} = 1$, a-b=1

4) OPTION A

Gn, $x= \sqrt{-1}$; $x^x=(\sqrt{-1})^{\sqrt{-1}} = i^i$

Wkt $e^{i\theta}= \cos\theta + I \sin\theta, \theta = \pi/2$

(i)^i=$e^{-\pi/2}$

5)OPTION B

Z= 4-3j = R-JX

R=4, I= 5COS(100πt+100) = acos(ωt+α)

P=1/2 a^2 R = 1/2*5*5*4=50 w

6)OPTION D

$L[f(t)]=F(s)= 1/(s^2+s+1)$;

$L[tf(t)]=(-1)\frac{dF(s)}{ds} = (-1)\left[\frac{-(2s+1)}{s^2+s+1}\right] = \frac{2s+1}{s^2+s+1}$

7)OPTION D

$\frac{N_1}{N_2} = \frac{E_{b1}}{E_{b2}} \times \frac{\varphi_2}{\varphi_1}$

$R_a = 0.25$; $I_{a=} 6 - 2.2 = 65.8$ A ; $I_{a2} = 52.8 - 1.8 = 51$ A

$\frac{1000}{1600} = \left[\frac{220-65.8\times0.25}{220-51\times0.25}\right] \times \frac{\varphi_2}{\varphi_1}$

$\frac{\varphi_2}{\varphi_1} = 0.6364$

%decrease=$\frac{\varphi_1-\varphi_2}{\varphi_1} \times 100 = 36.36\%$ decrease

8) OPTION A

X YZ 00 01 11 10

		1	1
1	1		

F= x y ' + x ' y

9) OPTION B

Gn: A= $\begin{bmatrix}-5 & -3\\ 2 & 0\end{bmatrix}$;

Characteristic equation of A is |A – Ix|= 0 => $\begin{vmatrix}-5-x & -3\\ 2 & 0-x\end{vmatrix}=0$

- $(-5-x)(-x)+6= 0 \Rightarrow 5x + x^2 + 6 = 0$
- $x^2 = -5x - 6$ and $x^3 = -5x^2 - 6x \Rightarrow -5(5x-6) - 6x$
- $x^3 = 25x - 6x + 30$

Every matrix satisfies its characteristics equation , $A^3 = 19$ A + 30 I

10) OPTION D

$$\frac{d^2Y(t)}{dt^2} + \frac{2dY(t)}{dt} + y(t) = \delta(t)$$

Converting in to s-domain,

$$s^2\,y(s) - sy(0) - y'(0) + 2[sy(s) - y(0)] + y(s) = 1$$

$$[s^2 + 2s + 1]\,y(s) + 2s + 4 = 1$$

$$Y(s) = \frac{-3-2s}{s^2+2s+1},$$

Find inverse laplace transform: $y(t) = [-2e^{-t} - te^{-t}]u(t)$

$$\frac{dy(t)}{dt} = 2e^{t} + te^{-t} - e^{-t}\ ;$$

$\frac{dy(t)}{dt}$ at t=o is 2 – 1 = 1

11)OPTION B

Since y(t) and x(t) are related with some function of time , so they are not time invariant. Let x(t) be bounded to some finite value k.

$Y(t) = \int_{-t}^{t} k\cos(3\tau)d\tau < \infty$

Y (t) is also bounded. The system is stable.

12) OPTION A

Let the number of Rs.20 notes be x and Rs. 10 notes be Y

20x + 10 y = 230 and x+y=14

Solving above equations , we have x = 9 and y = 5

Hence the numbers of 10 rupee notes are 5

13) OPTION B

Uniform distribution x , y on [-1 , 1] ; f(x) = f(y) = ½

P(max (x , y) ≤ ½) = p (x = 1/2, -1 ≤ y ≤ ½) . p(-1 ≤ x ≤ 1/2, y = ½)

=

$\int_{-1}^{1/2}\frac{1}{2}dx \int_{-1}^{1/2}\frac{1}{2}dy$ => 3/4×3/4 = 9/16

14) OPTION A

PMMC will read average value, $V_{avg} = \frac{area\ under\ curve}{time\ period}$

$$= \frac{\left\{\left[\frac{1}{2}\times10\times10\right]-[5\times2]+[8\times5]\right\}\times10^{-3}}{20\times10^{-3}} = 4\ V$$

15) OPTION C

$\cos\theta = \frac{R_L}{Z}$; 0.45 = 5/Z => Z = 11.11

$I = \frac{V_3}{Z} = \frac{136}{11.11} = 12.24$ A ; $P_L = I^2R_L$ = $12.24^2 \times 5 = 750$ w

16) OPTION A

$\varphi = \tan^{-1}\frac{\omega}{a} - \tan^{-1}\frac{\omega}{\beta}$

For phase lead φ should be + ve

⇨ $\tan^{-1}\frac{\omega}{a} > \tan^{-1}\frac{\omega}{\beta}$

⇨ a < b

both option (A) and (C) satisfier but option (C) will pot polar and zero as

RHS of s-plan thus not possible

17) OPTION A

For a lead compensator , a<b and a and b should be positive , (in RHP)

Else it acts as a oscillator ; a = 1 , b = 2 , $\omega_{max} = \sqrt{ab} = \sqrt{2}$ rad /s

18) OPTION D

Let 1.001 = x

$X^{1259} = 3.52$ and $X^{2062} = 7.85$

$X^{3321} = X^{1259} \cdot X^{2062} = 3.52 \times 7.85 \Rightarrow 27.64$

Indian Engineering Services

Indian Engineering Services abbreviated as **IES** are the civil services that meet the technical and managerial functions of the Government of India. Like most countries, the Government of India recruits its civil servants and officials on the basis of merit, the middle management positions in the bureaucracy are filled through competitive exams. Large number of candidates take these exams, competing for limited posts. IES officers are selected by the union government on the recommendations made by the Union Public Service Commission (UPSC). A combined four-stage competitive examination (comprising six tests), called the **Engineering Services Examination (ESE)** is conducted by the UPSC for recruitment to the Indian Engineering Services.

A. *Eligibility*

- Nationality : A citizen of India
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- Educational Qualifications : At least a bachelor's degree in Engineering (B.E. / B. Tech) from a recognized university or equivalent. M.Sc degree

Examination

Candidates are required to apply ONLINE only, by using the website **www.upsconline.nic.in**. The application fee of the online form for General category male candidates is ₹200, while no fee is required by female and the reserved category applicants. The test is conducted in June every year at centres across India.

Plan of examination

There are objective as well as conventional (descriptive) papers. One paper for GA (General Ability) is part of the assessment system apart from the engineering subject of the candidate. The entire technical subject is divided into four papers (Papers II, III, IV & V). There is a penalty (negative marking) for wrong answers marked by the candidate in the objective type papers. There is a three-day schedule of the written examination, comprising all five written examinations. The first day is allocated for the General Ability (GA) paper. This exam is of 2 hours duration. The second day is allocated for the Objective Technical Papers (II & III). The third stage is allocated for the Conventional Technical Papers (IV & V). This is the fourth and final stage; candidates who qualify the written exam are called for the interview. Interview carries 200 marks. Officially called "Personality Test", the object of the interview is to assess the personal suitability of the candidate for a career in public service by a Board of competent and unbiased observers.

RECENT EVENTS:

COLLEGENAME	SYMPOSIUM	DEPT	DATE	LINK
MATHA ENGINEERING COLLEGE,CHENNAI	MINYUTHAM2K13	EEE	01.10.2013	http://www.minyudham2k13.in/
AGLASEM,DELHI	EDUCON2013	EEE	01.10.2013	EduCon 2013
UIET Panjab University, Chandigarh	AARAMBH 13	EEE	01.10.2013	AARAMBH 13
KAMARAJ COLLEGE OF ENGINEERING AND TECHNOLOGY, VIRUDHUNAGAR	EVATAR'13	EEE	01.10.2013	http://evatar.in
ERODE SENGUNTHAR ENGINEEERING COLLEGE,ERODE`	ICALONICS	EEE	01.10.2013	http://dynafest13.weebly.com/
MEPCO SCHELENK ENG.COLLEGE,SIVAKASI	SUNWINS'13	EEE	01.10.2013	http://www.mepcoeng.ac.in/rec/sun/sunwins13.html
UIET Panjab University, Chandigarh	IEEE Conference on Cognizance of Applied Engineering and Research (ICAER'13)	EEE	02.10.2013	IEEE Conference on Cognizance of Applied Engineering and Research (ICAER'13)
SATHYABHAMA UNIVERSITY, CHENNAI	NATIONAL CONFERENCE ON EMERGING TRENDS IN NETWORKING	EEE	03.10.2013	http://files.sathyabamauniversity.ac.in/E&C/Front%20Page.jpg
MAHARAJA ENGINEERING COLLEGE,TIRUPPUR	E-DESIGN2K13	ECE	04.10.2013	https://m.ak.fbcdn.net/sphotos-g.ak/hphotos-ak-ash3/578427_560978337296325_1335206976_n.jpg
PAAVAI ENGINEERING COLLEGE, NAMAKKAL	TECHFINIX'13	EEE	04&05.10.2013	http://pec.paavai.edu.in/UpcomingEvents.aspx?Events=symposium170913
SYED AMMAL ENGINEERING COLLEGE	SYMPULSE'13	EEE	05.10.2013	Sympulse13@india.com
SRI RANGA BOOPATHI COLLEGE OF ENGINEERING	TEKNISKKRIG'13	EEE	04.10.2013	delphisrpce@gmail.com

COLLEGENAME	SYMPOSIUM	DEPT	DATE	LINK
UIET Panjab University, Chandigarh	IEEE Conference on Cognizance of Applied Engineering and Research (ICAER'13)	EEE	02.10.2013	IEEE Conference on Cognizance of Applied Engineering and Research (ICAER'13)
BALAJI INSTITUE OF ENG AND TECH,CHENNAI	ZEPHYR2013	ECE	05.10.2013	http://www.bietedu.in
KAMARAJ COLLEGE OF ENGINEERING AND TECHNOLOGY, VIRUDHUNAGAR	SPECTRUM'13	ECE	05.10.2013	http://www.spectrumt13.in
MUTHAYAMMAL ENGINEERING COLLEGE, RAASIPURAM	NATIONAL CONFERENCE ON INNOVATIONS IN SPECIAL ELECTRIC DRIVES,POWER AND ENERGY	EEE	07.10.2013	http://www.muthayammalengg.ac.in/Conference_Brochure.pdf
MP.NATCHIMUTHU M.GANATHAN ENGINEERING COLLEGE	ELECZY'13	EEE	08.10.2013	Eleczy13@gmail.com
ANNAPOORNA ENGINEERING COLLEGE,SALEM	NCCSIS'13 (CONFERNECE)	EEE	09.10.2013	http://nccsis13.wen.ru/
SASTRA UNIVERSITY	CAPE'13 (CONFERNECE)	EEE	18.10.2013	http://www.sastra.edu/cape2013/

STUDENT ACHIEVEMENTS

SL.NO	ORGANIZER	NAME OF THE STUDENTS	YEAR	RANK/STATUS	EVENT
1.	Raja's International College of Engineering for women, Nagercoil	B.Aneesha T.Graslin Rosery Shiney	IV	II	Circuit Debugging
2.	St.Xavier's Catholic College of Engineering	B.Aneesha T.J.Graslin Rosory Shiney	IV	I	Poster Presentation
3.	J.P. Engineering College	S.Gnanasri G.Janaki	IV	I	Paper Presentation
4.	University College Of Engineering, Panruti.	M.Mathan Kumar M.Veera Senthil	III	II	Technical Quiz
5.	Thiagarajar College of Science	R.Uma Maheswaran R.S.SaravanaKumar	II	II	Paper Presentation
6.	Kumaraguru College of Engineering	R.Thanga Pandian C.Senthil Vel	III	Participated	Paper Presentation
7.	Panruti Unversity of Engineering, Panruti	P.Muthu Kumar K.Pon Essaki Raman	III	Participated	Paper Presentation
8	Panruti Unversity of Engineering, Panruti	M.Veera Senthil M.Mathan Kumar	III	Participated	Paper Presentation
9.	University College of Engineering, Pattukkotai	P.Shanmugam M.S.Pranava Balaji	III	Participated	Paper Presentation
10.	Jaycee Club - NEC	A.Praveen Balaji R.Uma Maheswaran	II	III	Quiz
11.	Rotract Club - NEC	M.Subbiah P.Shunmugam	II	I	Paper Presentation
12.	IE(I) SB-NEC	M.Subbiah P.Shunmugam	II	III	Paper Presentation
13.	Zonal Level Sports Meet	S.M.K.Udhaya Vijay	II	III	Basket Ball
14.	Zonal Level Sports Meet	V.Suresh Kumar	III	I	Kabadai

SL.NO	ORGANIZER	NAME OF THE STUDENTS	YEAR	RANK/STATUS	EVENT
15.	Zonal Level Sports Meet	V.Suresh Kumar	III	III	Long Jump
16.	Zonal Level Sports Meet	V.Suresh Kumar	III	II	4*400 m
17.	Zonal Level Sports Meet	V.Suresh Kumar	III	II	Solo Dance
18.	National Engineering College	S.Sam Chandrasekar	III	Winner	Foot Ball
19.	National EngineeringCollege	V.Suresh Kumar	III	Winner	Foot Ball
20.	Zonal Level Sports Meet	S.Siddarth Gowtham	III	III	100 m
21.	VOC College of Engineering, Thoothukudi	R.Sneha	II	II	Ball Badminton
22.	JJ College of Engineering, Trichy	M.Sam Maxwell	II	Participated	Football
23.	Zonal Level Sports Meet	G.Malarkodi	II	Participated	800m, 1500m
24.	Zonal Level Sports Meet	R.Latchiya Bharathi	II	Participated	Football
25.	Zonal Level Sports Meet	P.Muthukumar	III	Participated	Volleyball

Staff Activities:

College Name	Staff Name	Title	Role/Workshop	Date
Sardar Raja College of Engg., Alangulam	Mr.M.Ravindran Asso. Prof/EEE	Electical machines	Guest lecture	05/09/2013
Sardar Raja College of Engg., Alangulam	Mrs.L.Kalaivani Asso. Prof/EEE	Techincal Symposium for one day	Judge	06/09/2013
Govt. college of Engg., Tirunelveli	Mrs.L.Kalaivani Asso. Prof/EEE	Application of knowledge representation for Power Electronics	Guest lecture	14/09/2013
National Engineering College, Kovilpatti	Dr.M.Willjuice Iruthayarajan HOD/EEE	Evloutionary Algorithm and its application to Non Destructive Testing	Guest Lecture	20.09.2013
National Institute of Technology, Tiruchirapalli	Dr.M.Willjuice Iruthayarajan HOD/EEE	Advanced control theory	Short-term training program	30.09.2013 & 31.09.2013

EEE NEWSLETTER

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