



NATIONAL ENGINEERING COLLEGE

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

K.R.Nagar, Kovilpatti - 628 503.



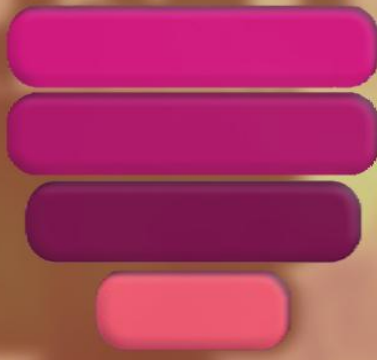
EEE

NEWS LETTER

October 2016

VOLUME NO 4

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DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

Dear Buddies,

"Man needs his difficulties, in order to enjoy success"

Life is not about winning the first time. If people had rejected the first defeat, world would have lost the great inspirations of time. The dreadful rejections that BMW faced gave a bang with stunning patterns of BMW cars.

The super star of cricket M S DHONI is enough to prove, a man who dealt with tickets can track number of wickets chasing his victory.

This month celebrates a special person "Mr. Mariyappan Thangavelu" who won his gold for high jump. He has proved that a person with shortest length can climb highest places in people's heart. This newsletter is to celebrate the winners and participants who have given their utmost effort. Keep cheering us with your valuable feedbacks.

Happy Reading...!!!!

- Ms.S.Suriya

Third Year EEE

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STAFF ACTIVITIES/PUBLICATIONS/ACHIEVEMENTS

ACTIVITIES:

S.No.	Name of the Staff	Events/Guest Lecture	Topic/Event	Date	College
1.	Mr.B.Vigneshwaran, Mr.Kumar, AP	Two days workshop	Image Processing using MATLAB	16.09.2016 & 17.09.2016	KPR Institute of Engg & Tech, Coimbatore
2.	Ms.C.Nivetha Indumathi, AP	Two days workshop	PID Controller	16.09.2016 & 17.09.2016	Anna University, MIT Campus, Chennai

PUBLICATIONS:

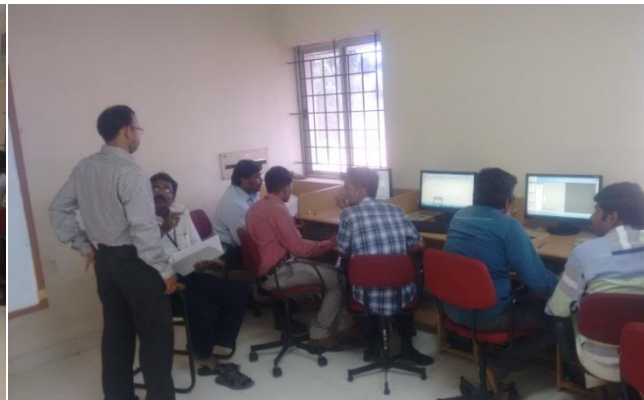
- ✓ *S. Senthil Kumar, M. Willjuice Iruthayarajan, M. Bakruthen and S. Gowthama Kannan, "Effect of Antioxidants on Critical Properties of Natural Esters for Liquid Insulations", IEEE Transactions on Dielectrics and Electrical Insulation, Vol. 23, No. 4; pp. 2068 – 2078, August 2016. - Annexure – I – Impact Factor: 1.306*

DEPARTMENT ACTIVITIES

SCADA HANDS ON TRAINING

Venue: EEE Research and Simulation lab.

EEE department Control and Instrumentation - Special Interest Group (SIG) organized a one day training program on the topic “**Hands on training on SCADA** “ on 21/09/2016. The resource person for the training is **Mr. Srinivasa Narayanan, Director – Operation, Trimak, Chennai**. 34 final year students who are doing the elective course PLC,DCS & SCADA and 3 faculties – Dr.M.Willjuice Iruthayarajan, Prof&Head/EEE, Mr.V.Suresh Asso Prof/EIE, Mr.N.Chermakani Asst.Prof/EIE attended the training.



Session 1 (10.30AM to 1.00 PM)

During the morning session, Mr.Srinivasan started with basic concepts of PLCs and significance of a SCADA system in an automation industry and also explained the difference between PLC and DCS. The WonderWare Intouch software was explained with its functional descriptions of creating tag, animation, alarm indication, trend and script with an example of a typical Tank Level Indicator. He then explained the method of interfacing wonderware intouch software to external connectivity, which is helpful in handling real time data logging.

Session 2 (2.00PM – 4.30PM)

During this session students practiced the steps for designing SCADA program in the software by themselves, with doubt clarification. They were explained with the real time interfacing of SCADA with Siemens PLC which helped the students to realize the control and monitoring operations. By the end of the session the students were able to realize a SCADA interface and its graphics for any basic application.

The session was concluded by Dr.M.Willjuice Iruthayarajan, Prof&Head/EEE and Mr.Srinivasa narayanan distributed the certificates to the student participants

SPECIAL INTEREST GROUP

CONTROL AND INSTRUMENTATION

Technical seminar - “*Introduction To Genetic Algorithm and PID Controller Tuning*”

Date - 3rd September 2016

Venue – Seminar Hall

Resource Persons - Dr.M.Willjuice Iruthayarajan (HOD/EEE), Ms.B.Jerlin, Ms.P.Kalaiyarasi, Mr.B.Vijaya Sankar Vignesh and Mr.K.Peratchi Hariharasudhan (Final year students).



Dr.M.Willjuice Iruthayarajan gave a brief introduction on genetic algorithm with its significance in electrical engineering optimization problems. He extended the session with the ‘Design of optimum PID controller with it’s Performance Indices’ and also he explained the ‘Classification of Optimization techniques for control engineering problems’. *Ms.B.Jerlin* gave a brief discussion about the ‘Scope and Needs of Genetic Algorithm and its Applications’. *Ms.P.Kalaiyarasi* continued the session with the explanation of ‘Various Types of Operators of Genetic Algorithm’ *Mr.B.Vijaya Sankar Vignesh* and *Mr.K.Peratchi Hariharasudhan* guided the prefinal year students with the ‘Implementation of GA using MATLAB’ and gave technical ideas to focus their project design related to the optimization techniques.

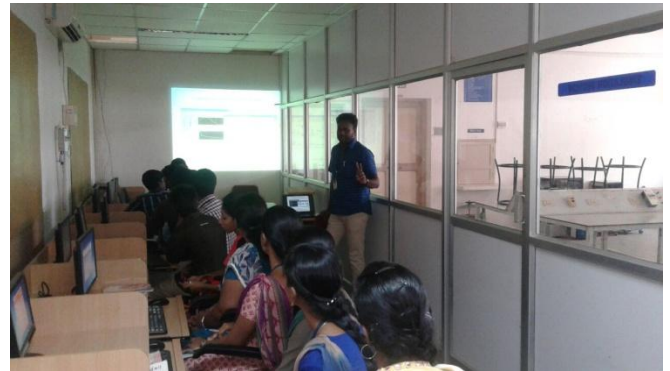
LABVIEW

Short term Course - “*Implementation of Control Engineering using LABVIEW*”

Date - 06/08/16 to 14/09/16

Venue: Control and Instrumentation laboratory of EEE department

Resource Person: Mr.Muniraj.R AP (S.G)/EEE and Mr.Sivapalanirajan.M AP/EEE.



Mr.R.Muniraj gave a topic about, “Introduction to LABVIEW and arithmetic and logical programming with example programs for while loop and case structure”, “Control and design tool box introduction and basic control configuration examples like cascade parallel” and “Simulation of controller configuration in LABVIEW using P, PI, PD and PID controller and stability analysis using MATH script”

Mr.M.Sivapalanirajan gave a topic about “For loop concept with example program”, “Roots of the characteristic equation”, “Array and cluster with example program”, “Control and simulation loop tool introduction

and examples for system response for various inputs”, “Stability analysis using Root Locus method and implementation” and “Stability analysis using Bode plot method”.

VALEDICTORY FUNCTION - LABVIEW



The Valedictory function was arranged in the EEE dept. on 26/09/16 with a welcome note by Mr.R.Muniraj in the presence of our honorable Principal Dr.S.Shanmugavel and our beloved HOD Dr.M.Willjuice Iruthayarajan. HOD delivered the motivational speech for the students. He shared the significance of using LABVIEW as development tool for their future projects. Principal Dr.S.Shanmugavel delivered the Valedictory address for the students about the way of handling the real life projects. He also encouraged the faculties and students to upgrade their practical skills in various simulation software packages like LabVIEW through special interest group of EEE department. Finally, our Principal and HOD felicitate the participants with the certificates for the student. Mr.M.Sivapalanirajan delivered the vote of thanks for all who provide their valuable support for the successful completion of this event.

CONTROL AND INSTRUMENTATION

Topics - *Introduction about System Identification Toolbox using MATLAB & Hardware interfacing using LABVIEW*

Date – 01.10.2016.

Venue - *Control and Instrumentation Laboratory*

Resource Persons - Ms.C.NivethaIndumathi & Mr.M.Sivapalanirajan AP/EEE



Session 1: She gave an introduction about System Identification, data sets and the selection of model structure. The theory session was followed by the discussion on the usage of system identification toolbox. An example was taught on the toolbox.



Session 2: He focus on the utilization of labview platform for the monitoring and control of real time systems. LVDT sensor is used for the monitoring of displacement and the corresponding control signal is sent through DAQ card as actuation signal indicated as LED. Students were motivated to take up different system with various numbers of input outputs for project development.

EMBEDDED SYSTEMS

An introduction to “FUZZY LOGIC” was given by **Mr.N.B.Prakash, Asso. Prof. and Mr.K.Balamurugan**, PG Scholar/EEE at Class Room H6 on 17.09.2016.

The objectives of the session are:

- Introduction to Fuzzy Logic
- Fuzzy Logic on MATLAB
- Fuzzy Logic tools handling using MATLAB

The presentation was started with the basic introduction about FUZZY LOGIC. **Mr.N.B.Prakash, Associate Professor/EEE** gave information regarding the Fuzzy logic and he made an interactive session with students about the applications of fuzzy logic.

Then **Mr.K.Balamurugan, PG Scholar/EEE** sustained the session with explanation how to use the fuzzy logic tools and also gives an idea with demonstration of how to use fuzzy logic on MATLAB software. Finally, the students were trained by doing hands-on session on fuzzy logic on MATLAB software.

HIGH VOLTAGE ENGINEERING

A presentation on “Nanofluids – Introduction and Research Scopes” was conducted on 17.09.2016 by **Mr. M. Bakruthen, Assistant Professor /EEE** at Class Room H5 for Special Interested Group (SIG) members. The main objectives of the session are:

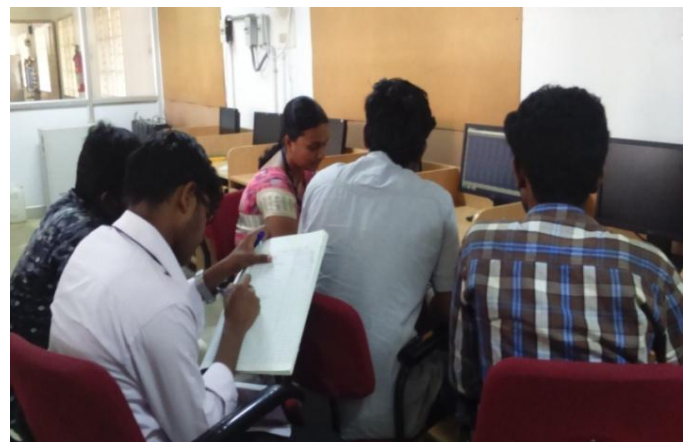
- To impart importance of liquid insulating medium in high voltage apparatus. To confer the present scenario on liquid insulation.
- To create the responsiveness for developing new insulation for the future.
 1. He gave a brief history on liquid insulation and its development. In this presentation, he provided the information such as: Requirement for liquid insulation in high voltage apparatus
 2. Development on liquid insulation in few decades
 3. Present liquid insulation system – transformer oil

4. Characteristics of liquid insulation and standard values
5. Diagnostics testing method for liquid insulation
6. Enhancement method for liquid insulation

He mainly discussed about the alternate/enhancement measure for liquid insulation particularly Nanofluids. In this presentation, he briefly presented the topics related with nanofluids such as:

1. Necessity of new/alternate insulating medium
2. Introduction to Nanofluids
3. Functional characteristics of Nanoparticles
4. Synthesis and characterization of Nanofluids
5. Limitations in Nanofluids
6. Research problem associated with Nanofluids

POWER ELECTRONICS AND DRIVES



The Special Interest Group on “Power Electronics & Drives” was held on 03/09/2016 at Control and Instrumentation by Ms.MohanaLatha. P,AP/EEE on the topic “Simulation of Power Converters using MATLAB”. She explained the different “Rectifier Circuits”. She also gave an introduction to MATLAB and the usage of Simulation Tools. She gave an idea to simulate the “Rectifier Circuits” in MATLAB and the response of Converter for R, RL, RLE loads with diode as a semi conductor device.

The Output Voltage of Rectifier for different loads were analyzed and verified with the theoretically calculated value. Introduction to “Controlled Rectifier” was given and the basic Rectifier Circuit was simulated using thyristor as power semi conductor device.

A seminar on “Design of 1 Φ Inverter using MATLAB & Introduction to 3 Φ Inverter” was conducted on 01/10/2016 by Ms.D.Kavitha, Assistant Professor/EEE at Research Simulation Lab for Special Interest Group (SIG) members. The objectives of the session are:

- Design of 1 Φ Inverter using MATLAB
- Introduction to 3 Φ Inverter

She discuss about various types of semiconductor devices. She explained about single phase inverter and made the students to design the single phase inverter circuit and generation of PWM signal using MATLAB. She also gave an introduction to three phase inverter

POWER AND ENERGY SYSTEMS

The Special Interest group (SIG) of Power and Energy Systems organized a special discussion on the topic “Recent Trends in Energy Conservation” on 17-09-2016 at EEE department Elective Hall 3.

The session was handled by Dr.M.Ravindran, Asso.Prof (S.G)/EEE. The recent development in energy efficient motor design and its benefits as compared to standard motors available had been discussed in that session. The factor which affects the performance of motor and solved numerical problems in motor loss, power factor, efficiency and energy cost calculation has also been addressed.

The session was started by 10.00 AM and completed by 12.45 PM. Totally 18 students from third year EEE was participated.

FIELD VISIT TO TNPL WIND FARM - REPORT

Venue: TNPL Windfarm, Devarkulam.

A field visit was organized for 32 final year EEE students who are doing the elective course PLC, DCS and SCADA on 28/09/2016. They were accompanied by **Dr.M.Willjuice Iruthayarajan** Prof&Head/EEE and **Mr.M.Sivapalanirajan** AP/EEE. We start here by 10.00AM and reached the plant by 11.00AM. The visit was made as two batches of students (each 16) with one person from the plant to explain the operation of plant.



Wind mill visit

The session was handled by **Mr.Robert Jones, Engineer of TNPL wind farm**. He explained the operation of wind mill by allowing us into the wind power station. He also demonstrated the various sections like modular PLC panel with power supply module, Analog and digital I/O module in control panels, communication protocols (RJ45) and power factor correction panel.

SCADA control and monitoring operation

The session was handled by **Mr.Chandra Sekar, Senior Engineer of TNPL wind farm**. He explained the way of receiving information about the working of various wind mills placed at remote locations from the control room. He demonstrated the SCADA software and interfacing I/O cards for the proper monitoring and control. The visit was useful for the students to have a visual idea of SCADA and PLC used in industries.

FIELD VISIT TO KAYATHAR

The third year “B” Section of 68 students along with two faculty members *Mr.B.Venkatasamy, AP/EEE* and *Mrs. K.Gowthami, AP/EEE* have visited *Kayathar 230kV/110kV Auto Substation* on 28.09.2016. This Field visit has been planned for the subject of Transmission and distribution.

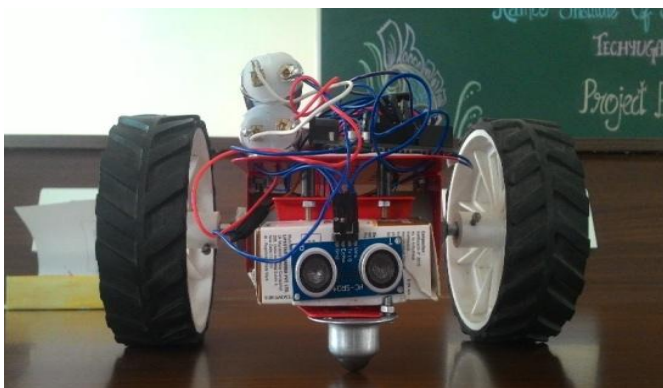
One of the *Assistant Engineer Mr.P.Suresh kumar* gave brief explanation about the layout of the overall substation and principle of grid substation, equipments using single line diagram. Then the students are visited inside the substation yard along with the technical persons. They asked about the various types of circuit breakers operation and auto transformers available in the substation.



OBSTACLE REJECTION ROBOT

Guided by: Mr. B. Venkatasamy

Presented By: Mr. S. Prabhu and Mr. B. Mathana gopal, Third Year



Here we are using arduino microcontroller with bluetooth module and ultrasonic sensor to make automatic and mobile controllable robot. We had coded the robot which will work with its own control



by using ultrasonic sensor and works corresponding to our commands by using the bluetooth module. For those, we assign two modes “manual” and “automatic” which could be chosen according to our wish. The robot will move with the help of motor which is driven by motor driver IC.

Automatic mode

Working of ultrasonic sensor module which has ultrasonic wave transmitter and receiver, the input of pulse with modulation is given to that sensor which processes the input signal and transmitter send only eight pulses above 20000Hz. The signal can be received when reflected (i.e., signal gets reflected when it strikes any object). The distance can be calculated by the time taken for the sending and receiving of the signal and its velocity. The above process is repeated for every 60 milliseconds. We had coded 30cm as a minimum distance. If the minimum distance that is programmed between the robot and any other object is attained, the robot will turn from its direction.

Manual mode

Working of bluetooth module is to receive the commands from any other bluetooth device which will be connected with the module via bluetooth. We created an application by using app inventor which will connect the mobile with module and it

A HANDS ON TRAINING IN ARDUINO

EEE department Embedded System Special Interest Group (SIG) conducted a short term training program in Arduino on the topic “A HANDS ON TRAINING IN ARDUINO” for III year students of EEE department. The workshop has been conducted on every odd Saturdays of the current semester. The course was started from 30/07/2016 as a value added course in the Microprocessor and Microcontroller laboratory of EEE department. Totally 41 number of students has participated in the workshop. Mr. S. Prabhu and Mr. B. MathanaGopal of III year EEE department contributed the session as a student coordinator.

Session1 (30/07/2016) *Mr.B.Venkatasamy AP/EEE and Mr. F. Antony Jeffrey Vaz AP/EEE* handled the first session with introduction to Embedded Systems. They explained the hardware structure of Arduino UNO and all the Arduino boards compatible with it. They extended the session with the basic programming concept in C programming and some basic Arduino interfacing such as LED and LCD interfacing



Session2 (06/08/2016) Mr. F. Antony Jeffrey Vaz handled the second session about the analog and digital interfacing and its LCD interfacing. In the next session of the day is continued by Mr. B.Venkatasamy and he explained about the motor driver controller L293D. Then he gave hands on training on the interfacing of the DC motor using L293D for forward/reverse operation.

has direction commands. Based on our command it will move in their corresponding direction.



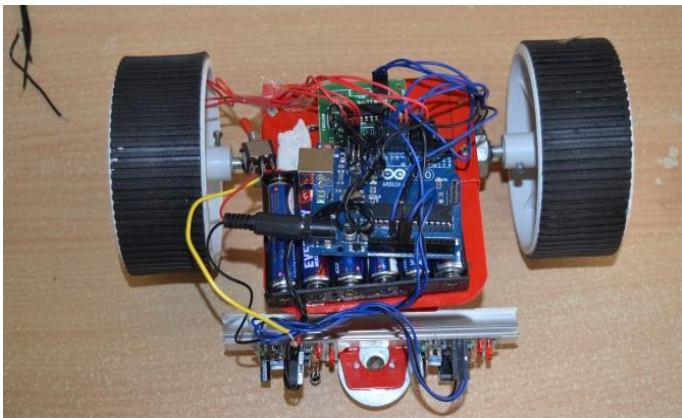
Session3 (20/08/2016) Mr. S. Prabhu handled the session about the GSM interfacing with Arduino. He explained about the AT commands and programming concepts for the sending/receiving of SMS and sending/receiving of CALL using GSM module. A hands on session was given to the participants for controlling electrical appliances using SMS/CALL from their mobile.

Session4 (17/09/2016) Mr.B.Mathana Gopal conducted the session and he gave the explanation about the principle and operation of ultrasonic sensor module. He demonstrated the interfacing the ultrasonic sensor module with Arduino for distance measurement. The session was continued by Mr. F. Antony Jeffrey Vaz and he explained about the interfacing of stepper motor and Servo motor with Arduino.

Session5 (03/09/2016)As Mr. S. Prabhu was trained in Android programming, he made his presence for guiding students in developing an “android apk” which connects with Arduino board with Bluetooth interface which can be used in any manually controlled remote system, which can be very useful in Home automation systems. At the end of session, all the participants developed the “Android-Bluetooth App” and they interfaced with the Arduino by hands on.



Session6 (01/10/2016) Mr.B.Venkatasamy and Mr.F.Antony Jeffrey Vaz handled the final session of the workshop and they guided the students to construct a line follower robot which works with two IR sensors and two motors as actuators and Arduino as its controller.



All students logically coded their own program. Mr. S.Prabhu and Mr. B.Mathana Gopal guided the participants to write the program and they finally demonstrated the line following robot



Valedictory Function (17/10/2016)

The valedictory function for the workshop was held at microprocessor and microcontroller laboratory of our EEE department on 17/10/2016. All the student participant completes a Arduino based project as the outcome of the workshop. The Honorable Principal Dr.S.Shanmugavel presides over the function. Mr.B.Venkatasamy, Coordinator of the workshop addressed for welcome the gathering. The principal, Dr.S.Shanmugavel gave presidential address for the function. Feedback was given by the student participants about the workshop. Certificate was given to the student participants by the principal. Finally vote of thanks was delivered by Mr. F. Antony Jeffrey Vaz, Co-Coordinator of the workshop.









Placement Details



On behalf of the Chairman, Managing Director, Director, Principal, Head of the Department and staff members, we heartily congratulates the final year students who placed in *Tech Mahindra* Campus drive in our campus during the month of October 2016.

- *Total No. of Students Placed : 14 No's*

			
Ms. Aksha J	Ms. AmalaAani A	Mr. Deepan Raj N	Mr. GanapathyVinayakam S
			
Mr. JeevaBharathi E	Ms. Jennifer M	Ms. Jerlin B	Ms. Maheswari K

		
Mr. Peratchi Harihara Sudhan K	Ms. Ramya Jemema M	Ms. Soundarya K
		
Ms. Suvetha A	Mr. Vignesh V.M.	Mr. Vijaya Sankar Vignesh B

A well-earned promotion to well-deserved persons.

Congrats!!!!

INDUSTRIAL VISIT

Sl. No	Place of Visit	Date	Branch/Year	Staffs Accompanied	No. of Students
1.	230kV/110kV Substation, Kayathar	16/09/2016	Final B	Mr. S.Senthilkumar Mr. S.Sankarakumar Ms. A.Tamilarasi	61
2.	230kV/110kV Substation, Kayathar	23/09/2016	Final A	Mr. S.Senthilkumar Ms. S Jayanthi	57
3.	230kV/110kV Substation, Kayathar	28/09/2016	Third B	Mr. B.Venkatasamy Ms. K.Gowthami	70
4.	230kV/110kV Substation, Kayathar	29/09/2016	Third A	Mr. G.Kannayeram MS. E.Anitha	55

APTITUDE TRICKS – C PROGRAM

- R.Bavithra (Final EEE)

Operators:-

1.

```
#include <stdio.h>
voidmain()
{
    intx=10;
    x+=(x++)+(++x)+x;
    printf("%d",x);
}
```

1. 44
2. 45
3. 46
4. 47

Answer – Option: 2.

- 1) Expand the expression: $x=x+(x++)+(++x)+x;$
- 2) Due to pre increment $++x$, x will be 11 for this expression.
- 3) After executing expression x will be 44.
- 4) Finally x will be 45 due to post increment ($x++$).

2.

```
#include <stdio.h>
voidmain()
{
    inta=10,b=2,x=0;
    x=a+b*a+10/2*a;
    printf("value is =%d",x);
}
```

1. value is =1250
2. value is =80
3. value is =125
4. ERROR

Answer – Option: 2

3.

```
#include <stdio.h>
voidmain()
{
    unsigned shortvar='B';
    var+=2;
    var++;
    printf("var : %c , %d ", var,var);
}
```

1. var : E, 69
2. var : E, 68
3. var : D, 68
4. var : D, 69

Answer-1

4.

```
#include <stdio.h>
voidmain()
{
    intx=(20 || 40 ) && (10);
    printf("x= %d",x);
}
```

1. 1.x= 60
2. 2.x= 70
3. 3.x= 0
4. 4.x= 1

Answer - 4

- 1) (20 || 40)both are non zero values, will return 1.
- 2) (1) &&10both are non zero values, hence output will be 1.

5.

```
#include <stdio.h>
voidmain()
{
    inta=3,b=2;
    a=a==b==0;
    printf("%d,%d",a,b);
}
```

1. 1.1,2
2. 2.3,2
3. 3.0,0
4. 4.2,3

Answer - 1

```
a=a==b==0;
a=(a==b)==0; //Since associate is left to right
```

6.

```
#include <stdio.h>
intmain()
{
    inti=-1,j=-1,k=0,l=2,m;
    m=i++&&j++&&k++||l++;
    printf("%d %d %d %d %d",i,j,k,l,m);
    return0;
}
```

1. 1.0 0 1 2 1
2. 2.0 0 1 3 2
3. 3.0 0 1 3 1
4. 4.0 1 1 3 1

Answer – 3**0 0 1 3 1**

TIME TO KNOW OUR ALUMNI



Mr. Koushik Muthu Kumar S

Batch : 2011

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Mobile no: +91-9940841972

PROFILE SUMMARY

Present working environment:

- ✓ Working in Tata Consultancy Services as Automation Test Engineer, Chennai, India from 09.12.2010 to till date.
- ✓ Worked on many Automation testing tools such as UFT, Selenium, Cucumber, Egg plant functional, Perfecto Mobile and more.

Present role in Tata Consultancy Services:

- ✓ Automation Test Lead for Citi Bank Online application.
- ✓ As a Project Lead, handling a team of 14 members.
- ✓ As a technical mentor to the team on script development.
- ✓ Analyzing various automation testing tools in the current IT trend and making the maximum benefits out of it satisfying the US clients and maintain the huge business runs with TCS.
- ✓ End to End guidance to the team on the application development, onsite/offshore coordination, requirement gathering, liaison between business and TCS.

Special training under gone:

- ✓ Trained in the current technologies like Hadoop, Talend, Pig, redshift , Hive, Tableau and also expertise in Oracle, informatica and Unix.

Students Achievements/ActivitiesSecond year

NAME	WORKSHOP	VENUE	DATE
A.Aasha	Video launch (conducted by ISTE)	NATIONAL ENGG COLLEGE	20-08-2016
M.Aninithusha			
R.Nishanthi			
K.Sethanadevi			
S.Sugashini			
R.Pavithra			
S.Priyadharshini			
B.Radha			

CAMP

NAME	NATURE OF THE CAMP	PLACE	DATE
B.Surendaran	BLOOD CAMP	KOVILPATTI	22/09/2016
M.Sathish Kumar			

Event

NAME	VENUE	PRIZE	DATE
C.V.Suryakumar	Tamil Nadu college of engineering Coimbatore	Participation	19-sep-2016
T.Sourabhi Krishna			

Third Year
Co-curricular Activities

NAME	EVENT	VENUE	PRIZE	DATE
P.Tamilarasi	Paper Presentation	Dr.Sivanthi Adhitanar Engineering College	Participation	2.9.16
S.Ramya				
R.Vinsly				
S.P.Sunanthaa				
A.Sangeetha	Paper Presentation	NCC- National Engg College	Participation	15.9.16
J.Senthiladevi				
S. Vinoka Sanjeevini				
S.Suriya	Paper Presentation	IE – National Engg College	2 nd Prize	10.9.16
P.Ponsharmila	Paper Presentation	IE- National Engg College	Participation	10.9.16
N.Shameema Farhana				
S.Sathiya Bamaa				
A.Najeeba	Paper Presentation	Raja's International Institute	Participation	10.9.16

NAME	WORKSHOP	VENUE	DATE
L.Raechel Annisha Angel	Xplorobotics	Government College Of Technology	4.9.16
P.Rajasree			
M.Nalini			
G.Ponmala			

NAME	EVENT	VENUE	DATE
N.Shameema Farhana	Chess (3 rd Prize)	Infant Jesus College Of Engineering	6.9.16

NAME	EVENT	VENUE	DATE
P.Tamilarasi	Circuit Untangle (1 st Prize)	Dr.Sivanthi Adhitanar Engineering COLlege	2.9.16

Finalyear

NAME	EVENT	VENUE	PRIZE	DATE
A.Ramasubramani M K.Srinath R.G.Prejith S.Muthuvel	Zonal Cricket Tournament	Anna University, Tirunelveli	Semifinalists	19, 20 & 21/09/2016
A.Primika	NCC Camp		Participation	21/09/2016

TECHNICAL ARTICLE BY STAFF MEMBER***MONITORING, CONTROLLING AND FAULT PROTECTION OF
DISTRIBUTION TRANSFORMER via IOT***

Mr. Antony Jeffrey Vaz

Assistant Professor

Department of Electrical and Electronics Engineering

ABSTRACT

Distribution Transformer failures have become a significant issue to both customers and the utility companies. Poor power quality may result into increased power losses, production loss, and power outages and causes undesirable behavior of equipments and may cause damage to the equipments connected to the low voltage side of the transformer. It also economically affects the customers and the utility. This project develops a monitoring system via an Ethernet LAN on the intended substation, in built On Load Tap Changer [OLTC] control system by monitoring the zero crossing of current and voltage during low voltage and over voltage, and fault protection and fault detection system. This helps the utility from unnecessary power outages, time wastage; it also provides an online control of the transformer remotely through internet and it helps the customer to avoid frequent power failures and ensure reliable and good quality power supply. As any fault in the transformer lead to increase the temperature of winding and oil, this method introduce a temperature sensor to monitor the temperature and to isolate the transformer before any damage to the distribution transformer. It enhances power quality at the customer premises and satisfaction of reliable power supply to the consumer.

INTRODUCTION

Distribution transformers are the main component of the distribution system which provides power for our electronic and electrical appliances in our homes and factories. Distribution transformers must be protected from fault and it should supply reliable and quality power i.e. at rated voltage without interruption. The power that is generated at various power stations is stepped up and transmitted at extra high voltages viz. 110 KV, 230 KV and 400 KV for reducing the transmission line losses. The voltage stepped down to service voltages at various receiving stations depending upon the requirement of the prospective consumers. The higher voltage is stepped down to 11KV/400V by distribution transformers and is made available at line.

WORKING:

Three potential transformers and three current transformers are used to acquire the real time voltages and current flowing in the distribution system. The output of each potential transformer is connected to a separate voltage conditioning circuit. Similarly the output of each current transformer is connected to the current conditioning circuit, The outputs from the conditioning circuits are fed to the controller system ADC channels. Continuous monitoring is performed to detect all types of power quality issues and faults. The system also protects the transformer by tripping out the breaker before a sever fault damages the distribution transformer. The system also checks for the transformer insulating oiltemperature. If any hot spot or rise in temperature detected above the predefined set value it cuts off the transformer supply till the transformer cools down. The system also provide a monitoring and controlling system via Internet, for security reasons a private network is used to connect all the distribution transformers and their data can be logged down at are remote terminal. Similarly controlling can be performed by the remote operator. Operator can turn on and off a particular transformer using network browser. All the traffic in the network should be secured via a end to end connection by using a private network.

CONCLUSION:

The distribution transformer care system is developed for acquiring voltage, current and oil temperature. Potential Transformer and Current Transformers are used to convert the parameter to a low level. Then a voltage and current conditioning circuit are used for all the three phases Voltages, using the controller's analog to digital converter analog output are converted to digital and measured. The system also gets the name plate details of the distribution transformer using a keypad interface inbuilt in it. A Liquid Crystal display of size 20x4 is used to display the measured values in real time. Data acquisition hardware was developed to monitor the voltage, current and oil temperature of the distribution transformer. All the monitored values are used to detect faults such as voltage sag, voltage swell, over load, over current, oil temperature rise, imbalance and short circuit fault. A web page is designed and a private web server network is built up to monitor and to control the distribution transformer from the remote substation itself. In future, the system must be implemented in a real distribution transformer.

STUDENT ARTICLES

Nanorobotics



Nanorobotics is the technology of creating machines or robots at or close to the scale of a nanometre (10⁻⁹ metres). Nanorobots (nanobots or nanoids) are typically devices ranging in size from 0.1-10 micrometres and constructed of nanoscale or molecular components. As no artificial non-biological nanorobots have so far been created, they remain a hypothetical concept at this time. Even a large apparatus such as an atomic force microscope can be considered a Nanorobotics instrument when configured to perform nanomanipulation. Nanorobots are expected to have revolutionary applications in such areas as environmental monitoring and health care. A network of special stationary nanorobots might be deliberately positioned throughout the body, logging each active nanorobot as it passes and then reporting the results, allowing a boundary to keep track of all of the devices in the body.. Some applications of nano robots are as follows.

- ✓ To cure skin diseases, a cream containing nanorobots may be used.
- ✓ It could remove the right amount of dead cells, remove excess oil, add missing oil, and apply the correct amount of natural moisturizing compounds.
- ✓ Devices working in the blood stream could chew away at arteriosclerotic deposits, widening the affected blood vessels.
- ✓ Cell hardening devices could restore artery walls and artery linings to health.

Nanorobots research in the military is mainly focused on protecting individual soldiers while in combat. They can be used as improved body armour that is capable of self-repair if damaged. Nanorobots will be used in the near future to rapidly repair injured people and damaged equipment on the battle field and as snooping devices that are practically undetectable.

- *D.R.Divya (Second year EEE)*

Rio Olympic: Empowering Women in Sports

In last few years, the subject of women empowerment has captivated the interest of the people all over the world and especially in India. The very fact behind this type regarding empowerment of women is that the discussion bears testimony to the deplorable condition of women all over the world but more so in India and other developing countries.

In the past, women were treated as mere slaves. They were denied basic fundamental rights like Right to freedom, Right to Education, etc. There were wide inequalities between men and women in any and every field be it politics, sports, education or corporate level. Today as well, even when there are examples like Indira Gandhi, PT Usha or Kalpana Chawla, the perception about women remains that they are incapable, which act as a huge barrier when it comes to making a choice of what they aspire to be. Today, women constitute more than 50 percent of the world's population, undertake most of the work but receive less income in comparison with the men. In addition to their domestic responsibilities like taking care of their child, cooking food, looking after the family; women are also contributing to the growth of nation as well. Some have become successful entrepreneurs, some are handling the politics of the nation, some are running the fashion world and some are representing the country at international level by playing various sports.

They have been successful in demanding the equality with men in matters of education, employment, inheritance, marriage, politics and in the field of sports as well. The position and status of women all over the world and in India has risen exceptionally in the 20th century. Women, who remained inclined within the four walls of their household, have today found out their own way-out to beat out men in every respect.

A long struggle has brought women the property rights, the voting rights, an equality before the law in matters of marriage and employment. Various steps have been taken by the Indian Government to empower women of every age and every caste. Criminal laws against sati, dowry, female infanticide and foeticide, eve teasing, rape, immoral trafficking and other offences relating to women have been enacted in addition to civil laws like the Dissolution of Muslim Marriages Act 1939, the Hindu Marriage Act 1955 and other Matrimonial enactments.

A National Commission for Women (NCW) was also constituted for the same. The year 2001 was declared as the Women Empowerment Year by the Government of India. Moreover, the 108th Constitutional Amendment Bill had been a highlight in the past few years. This legislation, popularly known as the Women's Reservation Bill, seeks to reserve one-third of seats for women in the Lok Sabha and the State Legislative Assemblies.

Women empowerment really has the power to change many things in the society and country. They are quick to deal with the crucial problems in the society. They are fully able to handle the economic conditions of the family and country.

And with these developments in the status of women, it came out right that empowering women means empowering the nation, strengthening the economy and revitalizing the society.

Role of Sports in Women Empowerment

Social stigmas often cause dejection in women from viewing themselves as physically powerful, proficient and self-governing individuals. In recent years, sports has surfaced as a mechanism to help women work against these self-limiting opinions. With the growing participation of women in sports globally and nationally, sports is being seen as a means of empowerment for women. Their participation in sporting activities enable them to live a life of dignity.

Call them the women of substance or beacons of hope, these strong sports contenders are capable enough in turning the heads back. Female athletes like PT Usha and Ashwini Nachappa have really resurged athletics in India.

New age sportswomen like Sania Mirza in Tennis, Mary Kom in Boxing and Saina Nehwal in Badminton are the few Indian women who never gave up on their dreams despite of coming from conservative backgrounds. This empowerment has helped women in dealing with crisis and emergency situations and manages things on their own without the compulsory male support.

Indian Women in Rio Olympics 2016:

P V Sindhu, Sakshi Malik and Dipa Karmakar

The 2016 Summer Olympics concluded in August 2016 at Rio de Janeiro, Brazil, witnessed more than 11000 athletes from 207 National Olympic Committees. A total of 117 athletes participated from India. India bagged a total of two medals, one silver and one bronze; both the medals won by women in their respective games.

Badminton player P V Sindhu won historic silver medal in women's singles badminton event. With this, she became the first Indian woman to clinch a silver medal in Olympics. On the other hand, Wrestler Sakshi Malik secured a bronze in the 58 kg category to become India's first female wrestler to win an Olympic medal.

Not to forget, India was able to qualify one artistic gymnast into the Olympic competition for the first time since 1964. Dipa Karmakar became the first Indian female ever to book an

Olympic spot in the apparatus events and all-around event at the Olympic Test Event. Unfortunately, she narrowly missed out in the bronze medal, finishing 4th in the finals of the event with a score of 15.066.

Moreover, Indian long distance runner Lalita Babar scored a time of 9:19.76 in her heat, qualifying to the final. With this, she became the first Indian in 32 years to enter a final in any track event. At the final, she finished 10th with a time of 9:22.74.

Despite the fact that these all sportswomen belonged from families with low income, still they managed to gather all their confidence and achieve what they aspire to be. This empowerment of women by encouraging them to participate in sports has opened up many new and exciting avenues for them in the world of sports.



- *K.Sethana Devi (Second year)*

12 Cool Facts About Electricity

We use electricity everyday, but most people know very little about the physical phenomena. Electricity is a type of energy that builds up in one place, or flows from one place to another. When electricity gathers in one place it is known as static electricity. Electricity that moves from one place to another is called electric current.

Here are a few more cool facts about electricity:

1. Electricity travels at 6,696,000 miles per hour.
2. Electricity plays an important role in the way your heart functions. Muscle cells in the heart are contracted by electricity that runs through your body.
3. What's a Volt? A unit of electric force, measuring the potential strength of current.
4. The typical lightning bolt packs 100 million volts.

5. The average taser emits 50,000 volts.
6. A spark of static electricity can measure up to 3,000 volts.
7. Electric eels can produce shocks of 500 volts or more.
8. Coal is the world's biggest source of energy for producing electricity. How does it work? Coal is burned in furnaces that boil water. The resulting steam from that boiling water spins turbines that are attached to generators or transformers.
9. Fossil fuels are the largest source of electricity, but wind, water and the sun can also produce it.
10. The first successful electric car was built in 1891 by American inventor William Morrison.
11. Benjamin Franklin didn't discover electricity, but he did prove that lightning is a form of electricity.
12. Ever wondered why birds that sit on power lines don't get electrocuted? If a bird sits on only one power line it's safe. If the bird touches any part of its body to another line, it creates a circuit, causing electrocution.

- *A.Aasha. (Second year)*

INVISIBILITY CLOAK

A hi-tech cloak, which hides you, much like the famous Harry Potter used to do when cornered by enemies!

We may be familiar with the term, "invisibility cloak" as from J.K.Rowling's books, in which young wizard Harry inherits a magical cloak that could make anyone who put it on, instantly invisible.



Now, scientists have moved a step forward in reality for the quest of invisibility by creating a hi-tech cloak that can render a person invisible. Let's see the hi-tech coat designed at two particular universities...

At the university of Tokyo,

Dr. Susumu Tachi, (the leader of the research team) designed a cloak in which the background image is processed by a computer and projected onto the wearer through a projector. From a certain angle, the cloaked person looks transparent to onlookers.

Simultaneously at the Queen Mary University, USA,



Professor Yang Hao, who led the study made a cloak out of a gradient-index material with seven superthin layers that each had different electric properties. These layers can hide whatever object they cloak, from interacting with electromagnetic waves and make the object invisible.

When the cloak is not being used, the object scatters electromagnetic wave causing the object to become visible. But when the "surface wave cloak" is used, there is no interaction between the electromagnetic wave and the object. Thus, the cloak hides the object that would ordinarily have caused the electromagnetic wave to be scattered.

- I. Jebisha Gnanadeepam. (Second year)

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