

KUMARI ARIVIAL PERAVAI

Young Scientist Programme 2014-2015

Technical Presentation on Science & Technological Innovations

Maria College of Engineering and Technology, Attoor

14/ 02/ 2015

Gby Atee,
Green team.

"A good start is always a good end."



The first meet of selected Young Scientists of Kumari Arivial Peravai (KAP) was held on 26/10/14 at LMS Boys Higher Secondary School and it was a meet of regulation. Then the two day Scientific Awareness Camp on 8/11/14-9/11/14 at CSI Institute of Technology, Thovalai which gave us a good start on Sustainable Environment, and the next meet at MACET on 22/11/14 which was on The Management Concepts in Thirukkural. The fourth meet, the medical camp at Govt. Medical College, Asaripallam on 29/11/2014. It educated us the activities of a doctor and taught us to become doctors. The next camp was a Study on Sustainable Environment on 6th and 7th of December. It was a two days camp which held at various places like Thirukurumkudi Nambikovil , PSN College campus and finally at Vivasaya Seva Sangam, Puliyankudi. With so much of eagerness we were awaiting for the next camp. The Coastal Environmental Study Camp was one of the best. We then had a common team meet on 04/01/2015 at Hindu Vidhyalaya School, Marthandam. The next meet at Government Library, Pienkulam on the 17th of January was the Arivial Tamil Muzhakam, and this meet emphasized the importance of Mother tongue Tamil. Then was the most awaited meet, **Technical Presentation on Science & Technological Innovations** held at **Maria College of Engineering and Technology, Attoor** on 14th of February.

Curiosity is what makes us successful. Keeping this in mind I was so curious to attend the Technical presentation. I was sure that this would bring out some of our hidden talents. Before the inaugural ceremony Mr. Velaian gave us a brief idea about the next meet. He announced the next meet on February 28th, National Science Day presentation. Sigma College of Architecture is the venue where the next meet would be held. The theme that we would be discussing that day is Scientific Development in India.

The presentation must be based on the development on the subject. He added that everything we do must be our own effort. If really we can't do something we mustn't ask others to do it but can seek the help from others and do it only then we will learn.

The meet commenced at 9:00 am with an invocation to goddess to Tamil. Abina the red team leader compeered the session. She welcomed Dr. Sujar, the principal of Maria College, Mr. Perumal, ISRO Manager, Mr. Mullanchery M. Velaian, the organizer of KAP, Mr. Shubin Tad, Mr. Thiruvengadam, Mr. Edwin Sam and Mr. Gopalan on to the dais. Then was the traditional practice of Tami Nadu, Lighting the lamp. All the dignitaries lit the lamp which was then followed by the welcome address. Abina then welcomed Mr. Velaian to give the Inaugural Address.



Mr. Velaian stated that all the programs that are conducted by KAP are valuable and unique. Each meet we get opportunity to visit several places and colleges and have created a good impression on us. Maria College of Engineering has given us this golden opportunity to present our technical presentation in the college. After Dr. Sujar was crowned as the principal he has been giving this kind of opportunities to many. He mentioned that we are fortunate to get this platform to present. Even the college students don't get this often but we at a very young are getting this kind of a chance to present. This is not only making us gain knowledge but we are also trained to overcome our fear and present fearlessly and confidently. Dr. Sujar is very supportive and is very much interested in supporting organizations which are taking initiatives to develop the children who are to be the future of India. He also requested us to sent thanks letter to the principal which symbolizes our gratefulness to the college. Mr. Perumal, the Manager of ISRO and Mr. Bergin, Physics teacher and the member of 'Education for All', who has a lot of scientific ideas and thoughts, Mr. Edwin Sam, with answers to all our question, Mr. Gopalan, one who corrects the mistakes of all and Mr. Thiruvengadam the best guide were present and we had to present our Presentation in front of them. He advised us to present confidently and boldly and not to worry even if we make mistakes, instead we must correct it and learn from it.

Abina then welcomed Dr. Sujar, the principal of Maria College to converse with us. He said that the college instigated in the year 2008 with 4 subjects which later on turned to 7 and 8. They conduct a lot of international and national conferences. He was not trained to do technical presentation but we are blessed to have got this opportunity at a young age of Grade: VIII. There is no use if we are not doing well in our exams even after learning. The same is applicable for presentation. Many people work for years on something and finally they won't be able to converse what they have done amid a crowd. If we go in search of knowledge then we will surely become great, he added. Write

Brothers and Thomas Alva Edison have become great because of their individuality. '**Set Goal, Work Hard and Don't Lose Hope**', if we keep this in mind and work then we will ultimately be victorious.

Then was the turn of Mr. Perumal to share his thoughts with us. He asserted that India is a developing country and KAP is developing the children for India's development. KAP has taught us to gather information and now it is going to test how well we are in it and in presenting heroically. He wished us all for the presentation and halted.

Mr. Bergin cited the 2 ways to present stuffs. First; cut, copy, paste and present and Second; think, analyze, study, innovate and present. All prefer the second way but practice the first way. We the children of future India must practice the second way and KAP is providing us with favorable conditions for it. The scientific way of presenting such presentation is to identify a problem then make suggestions, collect data, analyze and then execute. We get a lot of opportunity but we must use it properly. When someone gives us a negative comment we should accept it. The good comments are just for support but the negative comments are for our improvement. He concluded by saying that we must be grateful to KAP which is taking a lot of initiatives in shaping and molding us.

Mr. Thiruvengadam advised us not to get demotivated when we hear a negative comment. We must analyze it and correct ourselves. Then Mr. Gopalan asserted that what we learn when we are young is something that we will not forget easily. Now the new technologies are very common among small kids. They are much faster and are very interested in learning the new technologies. He added one of the innovations of a grade VII boy. He innovated an automated railing system. Accidents are very common because of the carelessness of the people when crossing railway tracks. So he developed a fence that would be raised when there is no train on the track and would go down when a train stops so that the people won't cross the track for any reason. He was awarded by Dr. APJ Abdul Kalam for his innovation.



Mr. Edwin Sam told in his talk that KAP is giving us a lot of opportunities to develop all our skills. When we ask question we learn a lot of new things. By the end of the training we would be perfect in our experimenting skills, communicating skills, listening skills, information gathering skills and also reporting skills. **There is no failure only learning.** Everything we do must be eco- friendly. At the end of this day we will be coming to know about some basic gadgets and then he halted. Abina thanked everyone and the first session came to an end.

Firstly I presented the technical presentation. The topic on which I presented was **Linear Power Supply**. A power supply is a component that provides power to an electrical device. The simplest design of power supply is the linear power supply. Linear power supplies are widely used because of the advantages they offer in terms of overall performance. Linear power supplies are often used in exacting situations where the regulation and removal of noise is paramount. While linear power supplies may not be as efficient as other types of power supply technology, they offer the best performance and are therefore used in many applications where noise is of great importance. Often audio amplifiers and many other items of electronic equipment use linear power supplies to obtain the best performance.

The main elements of the linear power supply are:

- ★ **Input transformer:** As many power supplies take their source power from an AC mains input, it is common for linear power supplies to have a step. This also serves to isolate the power supply from the mains input for safety.
- ★ **Rectifier:** As the input from an AC supply is alternating, this needs to be converted to a DC format. Various forms of rectifier circuit are available. Even for DC powered regulators, a rectifier may be placed at the input to guard against inverse connection of the supply.
- ★ **Smoothing:** Once rectified from an AC signal, the DC needs to be smoothed to remove the varying voltage level. Large reservoir capacitors are used for this.
- ★ **Linear regulator:** Once a smoothed supply is available, this can then be applied to the linear regulator. This will provide a properly regulated output.

Efficiency, size and heat dissipation are some of the disadvantages of linear power supply. Despite the disadvantages, linear power supply technology is still widely used, although it is more widely used where low noise and good regulation are needed. One typical application is for audio amplifiers. "Change is the only thing that remains constant in this world". Thus modifications to this can make it much more efficient.



Sree Ram of green team then presented on the theme **Petrol Car**. A car is a 4 wheeled transport medium especially for human to travel. **Karl Friedrich Benz** was a German engine designer and car engineer, generally regarded as inventor of the first automobile powered by an internal combustion engine. A petrol engine is an internal combustion engine with spark-ignition, designed to run on petrol. First is the intake stroke. Here the air with adequate amount of fuel is taken in through movement of the piston. Then the air fuel mixture is compressed. During compression the pressure and temperature

increases. At the end of compression the air fuel mixture is ignited by a spark plug. This creates a force and moves the piston. The downward movement of piston due to the ignition is called as power stroke and because of this power the car is driven. Mr. Bergin commented that he should have included how this energy created in the engine makes the wheels rotate.

Then was the turn of **Jisfia** to present on **MRI Scan**. An MRI (Magnetic Resonance Imaging) scan is a radiology technique that uses magnetism, radio waves, and a computer to produce images of body structures. It was invented by Raymond Vahan Damadian. The MRI scanner is a tube surrounded by a giant circular magnet. The patient is placed on a moveable bed that is inserted into the magnet. The magnet creates a strong magnetic field that aligns the protons of hydrogen atoms, which are then exposed to a beam of radio waves. This spins the various protons of the body, and they produce a faint signal that is detected by the receiver portion of the MRI scanner. The receiver information is processed by a computer, and an image is produced. An MRI scan can be used as an extremely accurate method of disease detection throughout the body and is most often used after the other testing fails to provide sufficient information to confirm a patient's diagnosis.

Aswin Kumar then shared some interesting ideas about **Neon Lamps**. A neon lamp is a simple lamp which produces light by gas discharge. In the year 1898 Neon was found by William Ramsay and Morris W. Travers in London, England. In the year 1900 the Moore tube was found by Danniell Mc Faralan Moore for discharge of gas. In the year 1902 in George Claude's, Air liquid Company neon was produced in liquid form. Then in the year 1910 Claude demonstrated the neon lighting. In the year 1915 a U.S. patent was issued to Claude covering the design of the electrodes for neon tube lights. Neon lamps can be changed into many colours as we wish. (E.g.: Neon + Mercury vapor + Argon = Blue). When electricity is passed through the ionized gas, is broken down in to Neon Atoms and Neon Ions. They both fuse to form photons. Photons are the light particles. Phosphorous is coated on the tube which releases UV light which is then converted in to visible light. Question was shot by the students which made us all even clear about the theme. After his presentation we had a short break and then we assembled again at the seminar hall.

Srinidi was given the topic **Turbine** to present. Turbine is a rotary mechanical device that extracts energy from a force fluid flow and converts it into a useful work. Moving fluid acts on the blades so that they move and impart rotational energy to the rotor. The credit for the invention of turbine goes to both **Sir Charles Parsons**, for the invention of reaction turbine and a Swedish engineer **Gustaf de Laval**, for the invention of impulse turbine. In an Impulse turbine, a fast moving fluid is forced through a narrow nozzle at the turbine blades to make them spin around. In a reaction turbine, the blades sit in a much larger volume of fluid and turn around as the fluid flows past them.

Kaviya Shree then presented her presentation on **Electric measurement Counter**. Electrically measures the particles. It was invented by Johannes Hengstler in the year 1926. The various types of counters Include:

- Cell counter - counts mammalian cells
- Binary counter
- Ring counter
- BCD counter
- Up- down
- Frequency counter

She focused on **Coulter's Counter**. Coulter's counter is an apparatus for counting and sizing particles when the electrodes are suspended. It is used to measure, cell bacteria and virus particles. It was invented by Coulter. It states that particles pulled through an concurrent with an electric current, produce a change in impedance that is proportional to the volume of the particle passing through the orifice. This pulse in impedance originates from the displacement of electrolyte caused by the particle. In the study of cell growth, pathogenesis it can measure changes in cell size and volume. One disadvantage is that when it classifies the blood into RBS or WBC it might not be accurate.

Then **Shruthikrishna** was welcomed to present on the topic **Diesel Car**. A car is a four wheeled vehicle using which we can travel. Diesel engine was invented by Rudolf Diesel in the year 1892. It actually begins with the invention of gasoline engine. A diesel engine is a type of internal combustion engine. The piston in the cylinder draws air and compresses it, which increases the pressure and temperature. It creates a spark and explodes which produces force and moves the shaft.

Haritha then presented on the subject '**Electrical Water Pump**'. Smaller electric water pumps, such as the kinds used in homes, usually have small DC motors. The DC motor is contained in a sealed case attached to the impeller and powers it through a simple gear drive. In the center of the motor is a rotor with coils around it. Around those coils are magnets, which create a permanent magnetic field that flows through the rotor. When the motor turns on, electricity runs through the coils, producing a magnetic field that repels the magnets around the rotor, causing the rotor to spin around 180 degrees. When the rotor spins, the direction of the electricity in the coils flips, pushing the rotor again and causing it to spin the rest of the way around. Through a series of pushes, the rotor continues to spin, driving the impeller and powering the pump.

With this the turn of Green team got over and it was over to Maroon team. Firstly maroon team leader, **Reshma** shared some interesting ideas on the topic **Inverter**. A power **inverter** is an electronic device or circuitry that changes direct current (DC) to alternating current (AC). The main components used in it are oscillator, transistor, transformer, relay, battery and a capacitor. Oscillator is used to create the ups and downs to the waves of AC current. In one simple inverter circuit, DC power is

connected to a transformer through the center tap of the primary winding. A switch is rapidly switched back and forth to allow current to flow back to the DC source following two alternate paths through one end of the primary winding and then the other. The alternation of the direction of current in the primary winding of the transformer produces alternating current (AC) in the secondary circuit.

Dani then gave us a clear idea about the working of a **Vacuum Cleaner**. It is a device that uses an air pump to create a partial vacuum to suck dust and dirt. Vacuum cleaner works under the principles of:

1. Bernoulli's Principle: Objects under high pressure, tend to flow to an area of low pressure until the forces equal out.
2. Friction: kind of force created by rubbing and can slow things down and then ultimately stop them.

The vacuum cleaner functions as follows

1. First electricity is supplied to the motor.
2. The motor converts the supplied electrical energy to mechanical energy.
3. The motor is connected to the fan. The fan is considered as the heart of the vacuum cleaner. When air particles are driven forward, the density of particles and the air pressure increases in front of the fan and decreases behind it. This makes the fan cause partial vacuum behind it.
4. Next process suction is under the principle of Bernoulli's law. Suction is the production of a partial vacuum by the removal of air in order to force fluid into a vacant space. As long as the fan is running and the passageway through the vacuum cleaner remains open, there is a constant stream of air moving through the intake port and out of the exhaust port.
5. The air from the atmosphere along with the dust particles is sucked in through the intake port. Friction carries the dirt into the vacuum bag.
6. A vacuum filter separates the dust from air. The dust that stays back as the residue is stored in the permeable bag.
7. The air that moves out as the filtrate is exhausted through the exhaust port of the vacuum cleaner.

Abila then presented on the theme **Mike** and made us clear about how it works. Mike was invented by Emile Berliner. Microphones are a type of transducer - a device which converts energy from one form to another. Microphones convert acoustical energy (sound waves) into electrical energy (the audio signal). Different types of microphone have different ways of converting energy but they all share one thing in common: The diaphragm. This is a thin piece of material (such as paper, plastic or aluminum) which vibrates when it is struck by sound waves. In a typical hand-held mike like the one below, the diaphragm is located in the head of the microphone. When the diaphragm vibrates, it

causes other components in the microphone to vibrate. These vibrations are converted into an electrical current which becomes the audio signal.

Sanjana was then called to present on **Emergency light**. An **emergency light** is a battery-backed lighting device that switches on automatically when a building experiences a power outage. When there is power supply the lighting system gets charged. When the main power supply fails during a blackout, the charging current is interrupted and a current flows from the base of transistor via resistor resistor which triggers the transistor to conduct and the two emergency lamps light up. When the main power returns, the charging current flows again through diode and the transistor turns the lamps off.

Then was the turn of **Jenisha** to present on **Battery Charger**. A **battery charger** is a device used to put energy into a secondary cell or rechargeable battery by forcing an electric current through it. It works as follows;

- * A battery charger is basically a DC power supply source. Here a transformer is used to step down the AC mains input voltage to the required level as per the rating of the transformer.
- * This transformer is always a high power type and is able to produce a high current output as required by most lead-acid batteries.
- * A bridge rectifier configuration is used to rectify the low voltage AC into DC and is further smoothed by a high value electrolytic capacitor.
- * This DC is fed to an electronic circuit which regulates the voltage into a constant level and is applied to the battery under charge, where the energy is stored through an internal process of chemical reaction.
- * In automatic battery chargers a voltage sensor circuit is incorporated to sense the voltage of the battery under charge. The charger is automatically switched OFF when the battery voltage reaches the required optimum level.

Aruna then shared some interesting ideas on the theme '**Whether monitor**'. Thermometer measures the temperature, Barometer measures the atmospheric pressure, Hydrometer measures the humidity and a Disdrometer measures the drop size distillation. The sensors receive the signals. As they are analogue they are converted in to digital using an Analogue to Digital Converter. This then sent to the microprocessor and the computers connected receive this signal.

Next was the turn of Yellow Team to present and first **Edin Jijo** presented on **Digital Camera**. KODAK was the first company to produce a digital camera. Digital Camera is used to take pictures in much the same way as a film camera. Instead of the image being caught on a film it is caught by a series of sensors that are arranged in grid. The lenses reflect the light and the light sensor senses it. The digital Image Processor converts the light into pixels and in the microprocessor the image gets formed. When all

the individual pin-pricks of colours are put together they make a picture. The little areas of colour are called pixels or picture elements. The more pixels an image has the more clear the image is. The main advantage of digital camera over a normal camera is that the images can be viewed and manipulated more readily.

Ragul was then called for to present on the theme **Speaker**. It is believed that Alexander Graham Bell invented the speaker. The speaker in human ears work similar to a mechanical speaker. The main functional parts include a voice coil, magnet, suspension and a diaphragm. At the front of a loudspeaker, there is a fabric, plastic, paper, or lightweight metal **cone** not unlike a drum skin. The outer part of the cone is fastened to the outer part of the loudspeaker's circular metal rim. The inner part is fixed to an iron coil that sits just in front of a permanent magnet. When you hook up the loudspeaker to stereo, electrical signals feed through the speaker cables into the coil. This turns the coil into a temporary magnet or **electromagnet**. As the electricity flows back and forth in the cables, the electromagnet either attracts or repels the permanent magnet. This moves the coil back and forward, pulling and pushing the loudspeaker cone. Like a drum skin vibrating back and forth, the moving cone pumps sounds out into the air.

Argineshya then presented her technical presentation on the topic **Scanner**. Ray Kurzweil is said to be the inventor of scanner. A scanner is a device that shines light on a document and can interpret the reflected light so that the image can be stored in a computer system. The advantage of scanning a document is that a hard-copy material can be changed into a soft-copy, which is in a form that can be edited or stored on the computer system. However the reduction in quality of the scanned document depends on the technical specification of the scanner.

Vishal was called upon to present on the theme **ECG**. ECG stands for **Electro Cardio Gram**. An electrocardiogram is a test that checks for problems with the electrical activity of your heart. An ECG translates the heart's electrical activity into line tracings on paper. The spikes and dips in the line tracings are called waves. Each heartbeat begins with one tiny area of the heart muscle depolarizing. When this happens the electrical depolarization, which triggers the muscle cell to contract quickly spreads to the next cell, and so on until the entire heart muscle contracts. When the process proceeds normally, a small area in the right atrium called the sinoatrial node acts as the pacemaker for the heart, and triggers each heartbeat. Specialized heart muscle cells called the Purkinje fibers rapidly carry this stimulus throughout the atrium and to a tiny group of cells that connect the atria to the ventricles, called the AV node. This causes a very brief delay, and then the stimulus races off through the conduction bundles of specialized fibers in the ventricles to the muscle cells of the ventricles and then they contract to pump blood to the lungs and body.

When cell membranes in the heart depolarize, voltages change and currents flow. Because a human can be regarded changes in potential are transmitted throughout the body, and can be measured. When the heart depolarizes, it's convenient to represent

the electrical activity as a vector between two point charges. By looking at how the potential varies around the volume conductor, one can get an idea of the direction of the vector. This applies to all intra-cardiac events. Each heartbeat can be looked at in its various functions on the EKG. The depolarization of the atrium is a relatively small current, which happens first, and is called the "P" wave. After the P wave is the delay as the AV node does its job to stall long enough for the atria contraction to pump blood into the ventricles, and then the depolarization of the ventricles takes place in a predictable pattern in a predictable period of time. If it takes longer than usual for the ventricles to depolarize, we deduce that the specialized conduction fibers are not functioning normally, and we call this "heart block."

Then was the turn of **Malavika** to present on the topic **Printer**. Laser Jet Printers - They use static electricity to stick plastic powder (toner) on the paper and then melt it onto the paper using a hot roller. Ink Jet Printers - They spray tiny drops of ink onto the paper to create the image. The dots are as small as 50 microns. **Vijay Raj** then gave us a brief idea on the theme **Fire Alarm**. A fire alarm is a simple alarming device that indicates fire. When the sensor detects the change in temperature or if it detects smoke the circuit gets complete and the alarm alarms.

Leena presented on **Magnetic Train**. Magnetic train is considered as the fastest train in the world which can travel at a speed of 30.88km in 8 minutes. Maglev trains are trains which are suspended, guided and propelled (moved forward) by magnetic forces. The track of the maglev train is called the guide-way. Working of the maglev trains can be studied under the following; Levitation, Propulsion and Guidance.

Levitation

Maglev trains have no contacts with the rails while they move forward. They are levitated on the guide-way with the help of magnetic forces. Levitation is the process by which an object is suspended against gravity in a stable position without any physical contact.

Propulsion

Propulsion is moving the train forward. To propel the vehicle, the electromagnets are placed on the sides of the guide-way. They are energized according to the time when the train reaches that particular spot and are de-energized the rest of the time.

Guidance

The propulsion coils are used for guidance. The propulsion coils are placed on the left and right side of the guide-way. Emf is induced in the coils when the train is moving, the same principle on which EDS works. The coils are connected and hence the emf on either side of the train are opposite in direction. Hence, they cancel out each other. Thus the train moves in the centre of the guide-way. The train moves very smoothly and is preferred by many due to its comfortable setting.

EB Transformer was the topic on which **Abina** presented. A transformer is an electric device that can increase or decrease the voltage. The three major parts of a

transformer are; a Laminated Core, Primary Coil and a Secondary Coil. A Laminated Core is the thick frame. The Primary Coil is insulated with copper wire and is connected to AC current and the input first pass through here. The Secondary Coil is also insulated by copper wire and the output passes out through here. The Principle under which a transformer works is the Electromagnetic Induction. The step-down transformer has less turns in the primary coil and more turns more turns in the secondary coil and this decreases the voltage. The step-up transformer has more turns in the primary coil and more turns less turns in the secondary coil and this increases the voltage. Mr. Bergin added that input power is equal to output power.

Then **Raksha** presented on the topic **Pen Drive**. It is a type of Universal Serial Cable (USB) flash drive. It is a kind of memory card that can be plugged into a computer's USB Port. It is termed "Pen drive" with reference to its size. A pen drive is used to store data and has a storage capacity of 64 MB to 32 GB. It is removable and rewritable. When a pen drive is connected to a USB port, it is activated. The USB port gives the pen drive access to the information on a specific computer drive. The data that is to be transferred is connected through a computer programme. It is then read, transmitted or rewritten from a pen drive to a computer or vice versa. Thus the required data gets copied to any selected drive on the computer for further use.

Induja then presented on the topic **Tape Recorder**. An audio **tape recorder** is an audio storage device that records and plays back sounds, including articulated voices, usually using magnetic tape, either wound on a reel or in a cassette, for storage. Tape-recording devices include reel-to-reel tape deck and the cassette deck. Cassettes are simply another way of preserving recorded sound on magnetic tape. The cassette is pushed into the playback area over two special playback heads and two spindles at the bottom, which keep it, locked in place. Pressing on the "Play" button helps to rub the right playback head against the tape. This motion, in turn, produces an electromagnetic pulse that rearranges the particles into recognizable sounds. Reel-to-reel is the form of magnetic tape audio recording in which the recording medium is held on a reel, rather than being securely contained within a cassette. In use, the supply reel containing the tape is mounted on a spindle; the end of the tape is manually pulled out of the reel, threaded through mechanical guides and a tape head assembly, and attached by friction to the hub of a second, initially empty take-up reel.

Pardeep Narayanan then gave us a brief idea about **Robots**. A robot is an electro mechanical device that can perform human actions either automatically or by a remote control. Some of the main parts include;

Sensor - Sensors measure attributes and interacts with external events. Using a transducer, the sensor transforms the energy associated with what is being measured into another form of energy. In robotics, some of the items sensors measure include speed, orientation, and proximity of other objects. Controller - This regulating device initiates one or more functions of operation in the robot arm, such as starting,

stopping, reversing, and changing speeds by issuing a preset list of commands.

Actuator - The actuators are the motors and drives inside the robot body that are used to create and control motion.

Then was the turn of **Niveth Shankar** to present on **Network Switch**. A network enables to communicate with each other and share information and connect certain devices like printers and scanners. At the central point is a particular kind of network device called a switch or a hub. The cables from all computers on the network are plugged into this device. Hubs and switches look the same. However, when signal are received from the network hubs and switches treat the signal in a different way. A message sent to the switch will have the address of the devices to which it should be send. The switch knows the addresses of the different devices on the network and send the message to the correct person. In a hub which creates needless network traffic, a message is send to all the systems and the one who needs it accepts it.

Radio - AM/ FM was the topic on which **Ragul** presented. AM and FM radio programs are transmitted over the air via radio waves, which are part of a broad range of electromagnetic waves that include visible light, X-rays, gamma rays and others. AM radio uses amplitude modulation and is the simplest form of radio broadcast. To understand amplitude modulation, consider a steady signal broadcasting at 1000 kHz on the AM band. The amplitude or height of the constant signal is unchanged or unmodulated, thus no useful information. The steady signal produces only noise until it is modulated with a voice or music. FM radio uses frequency modulation, which changes or modulates the frequency of the unmodulated signal while keeping the amplitude of the signal constant. When the frequency is modulated, music or talk is transmitted via the carrier frequency. FM radio operates in the range of 87.5MHz to 108.0MHz, a much higher range of frequencies than AM radio.

Nishanth then shared some ideas about **Multimeter**. A **multimeter** is an electric measuring instrument that combines several measurement functions in one unit. A multimeter is a combination of a multi-range DC and AC voltmeter, ammeter, ohmmeter. Contemporary multimeter can measure many quantities. The common ones are:

- Voltage, alternating and direct, in volts.
- Current, alternating and direct, in amperes. (The frequency range for which AC measurements are accurate must be specified).
- Resistance in ohms.

Additionally, some special multimeter measure:

- Capacitance in farads.
- Conductance in Siemens.
- Decibels.
- Frequency in hertz.
- Temperature in degrees Celsius or Fahrenheit

Vinoj then gave us a brief idea about the working of a **Grinder**. A grinder is used to grind flour. The stone used is of high quality marble. The wet grinder was invented by Mr. Sabapathi who was motivated by his wife. When the power is supplied the motor runs and the belt connected to it turns. As the belt rotates the stone also rotates and grinds the flour.

Then was the turn of blue team members. The first one was **Akshaya** to present on the topic **Wrist Watch**. Petek Philippe is said to be the inventor of wrist watch in the 19th century. Wrist watch is a time piece which can be carried. It works under the Piezo Electric effect. Mechanical clocks tell time using gears. They have two important parts: a main spring and a pendulum. Mechanical clocks are wound with a key, and this tightens the main spring. As the main spring unwinds, its energy turns gears which cause the hands to move. The pendulum keeps time and ensures that the gears move at the right pace: second by second. Instead of a main spring, some mechanical clocks have weights that pull the gears at the right pace. Mechanical clocks do not need electricity to operate. They can run off of the energy generated by their springs and weights.

Ashmi presented on the topic **Off-set Printer**. An off-set printer produces a high quality output and is used in places where a large numbers of copies are to be printed. **Off-set** printing also transfers ink from a printing plate onto paper, but instead of the plate pressing directly against the paper, there is an extra step involved. The inked plate presses onto a soft roller, transferring the printed image onto it, and then the roller presses against the printing surface - so instead of the press directly printing the surface, the printed image is first offset to the roller and only then transferred across. Offset printing stops the printing plate from wearing out through repeated impressions on the paper, and produces consistently higher quality prints.

Then **Siyana** presented on the theme **AC**. Air conditioners use chemicals that easily convert from a gas to a liquid and back again. This chemical is used to transfer heat from the air inside of a home to the outside air. The machine has three main parts. They are a compressor, a condenser and an evaporator. The fluid arrives at the compressor as a cool, low-pressure gas. The compressor squeezes the fluid. The closer the molecules are together, the higher its energy and its temperature. The fluid leaves the compressor as a hot, high pressure gas and flows into the condenser. The fins help the heat go away more quickly. When the fluid leaves the condenser, its temperature is much cooler and it has changed from a gas to a liquid under high pressure. The liquid goes into the evaporator through a very tiny, narrow hole. On the other side, the liquid's pressure drops. When it does it begins to evaporate into a gas. As the liquid changes to gas and evaporates, it extracts heat from the air around it. The heat in the air is needed to separate the molecules of the fluid from a liquid to a gas.

Ruthra was then called for to present on the topic **TV**. TV is a tele-communication medium used for transmitting and receiving moving images and sounds. The basic idea of television is "radio with pictures". In other words, where radio transmits a sound **signal**

through the air, television sends a picture signal as well. You probably know that these signals are carried by radio waves, invisible patterns of electricity and magnetism that race through the air at the speed of light. Television is really a three-part invention: the TV **camera** that turns a picture and sound into a signal; the TV **transmitter** that sends the signal through the air; and the TV receiver that captures the signal and turns it back into picture and sound. To make radio waves that are strong enough to carry radio and TV pictures many miles from a TV station to someone's home, you need a really powerful transmitter. This is effectively a giant antenna, often positioned on top of a hill so it can send signals as far as possible. Not everyone receives TV signals transmitted through the air in this way. If you have cable television, your TV pictures are "piped" into your home down a fiber-optic cable laid beneath your street. If you have satellite television, the picture you see has been bounced into space and back to help it travel from one side of the country to the other. TV creates moving pictures by repeatedly capturing still pictures and presenting these **frames** to your eyes so quickly that they seem to be moving.

Train was the topic on which **Aglin Bala** presented. The father of Indian Railway is Lord Dalhousie. In the beginning Coal powered train was very common. Coal was burnt in a chamber and this heats the water which produces water vapor and is converted into steam. The steam moves the piston and thus the wheels rotate and move forward. In diesel trains the diesel is burnt and it produces smoke. The smoke moves the piston and moves forward. The fastest train is Durnoto Express.

Shyam then presented on the topic **Tube light**. Tube light emits light and it was invented by Peter Copper. The main parts of a tube light are the Ballast, the Starter and the Tube. The Ballast receives 230V and it converts it into 40V. The Starter consists of a blinker and a capacitor. A starter is actually a capacitor connected in parallel with a fluorescent lamp. To strike a fluorescent lamp a sudden spark of current discharge is required in the tube. The starter supplies this initial spark which ionizes the gas, making it glow.

Finally **Navinjith** presented on the theme **Bicycle**. Bicycle is a human powered, pedaled vehicle which can be used to move from one place to the other. A bicycle consists of many simple machines like pedals, wheels, brakes, gears and handle bars, that all work together. Pushing the pedal forward turns a large cog. The teeth on the large cog pull the chain which is attached to a smaller cog on the rear wheel. This causes the rear wheel to turn and the bicycle moves forward. The wheels turn moving the bicycle in a forward direction. Turning the handle bars on a bicycle causes the front wheel to turn. This changes the direction in which the bicycle is moving. The pedals, wheels, brakes, gears and handle bars are all simple machines. Each simple machine works together to make the bicycle move in the direction the rider chooses.

A student from the Maria college of Engineering gave a feedback about our performance. He stated that all performed really well. He appreciated all of us for

presenting so well and wished us best of luck for the further presentations. Then Dani, Induja, Srinidi, Ruthra and Ragul gave the feedback in brief. Then Mr. Bergin added that all the students performed well. What we did was more than our capability, he stated. He advised us to use fewer words in our slides, avoid copying and he requested us to improve our information gathering skills. Miss. Lekshmi, a former young Scientist of KAP further said that it was good to see all of us present so well and the fear within us was no more. We also answered to the questions well without any hesitations. She recommended us not to write in paragraphs, not to memorize and to face the audience in a cheerful way.

To end with Mr. Velaian cited that the support of Maria College, its staffs and students was note worthy. Our works were more than our age limit. Whenever we have a doubt we must seek help from the members of KAP. National Science Day program must be in a different angle. Our presentation must be based on its development over the past few years. Lunch and breakfast will be provided and the bus will leave at sharp 6:50am from Marthandam. For the students who were not able to present on 14th, they will have to present on 15th, Sunday at the same venue he added. So the rest of the presentation will continue the next day.

Students who had to present and some of the others were present at the same venue on 15th, the next day at 2:00pm. The meet commenced with a talk by the organizer. Mr. Velaian stated that a person who states that our work is excellent is not the right person. The person who states that our work is useless is also not the right person. The person who says that the work is good and it can be improved and gives us suggestion to improve it is the best person. One such person is Mr. Vikram. When we practice everything on our own it brings great changes. He recommended us to try everything on our own and learn something new from everything.

Jerishya of Maroon team was the first one to present. The theme on which she shared her ideas was **Refrigerator**. Oliver Evans was the inventor of fridge. A bear in the Alphas Mountain takes 3 months to decay. This is because of the reason that the bacteria in it can't act very quickly as it is too cold. This motivated him to invent the refrigerator. A fridge is a cooling device used for the storage and preservation of fresh food, slowing down the bacterial growth. The main parts of a refrigerator are the compressor, condenser, ventilator, expansion device and evaporator. The compressor gains the atmospheric gas and compresses it. As the pressure increases the temperature of the gas is also high. The hot gas is converted into cool liquid with high pressure. The ventilation fins exhausts the hot gas. The Expansion Device converts the high pressure into low pressure which makes the water even cool. The food inside the fridge emits a bit of heat. This is evaporated and sent to the compressor for further process. CFC (Chloro Fluro Carbon) and Freon are cooling agents and this cause global warming.

Then was the turn of Yellow Team leader, **Abhirami** to present on the topic **Stop Watch**. Stop watch was invented by Samuel Watson. Stopwatches are watches that time

events. Instead of telling one the time of day, the stopwatch tells the person how long it took to perform a certain function. The stopwatch contains buttons to perform certain functions, such as starting, stopping and split timing. Stopwatches have a timer built into them. A timer is the reverse of a stopwatch. Instead of timing the event, the timer times how long it takes you to do something.

Rocket was the topic on which **Ayana** presented. A rocket works under the principle of Sir. Isaac Newton's third law of Motion; "**For every action, there is equal and opposite reaction**". The massive force (action) generated by hot gases firing backward from a rocket's engines produces an equal force (reaction) that pushes the rocket forward through space. Liquid hydrogen (the fuel) from one tank is mixed with liquid oxygen (the oxidizer) from a separate tank using pumps and valves to control the flow. The oxidizer and fuel mix and burn in the combustion chamber, making a hot blast of exhaust gas that propels the rocket. The payload (the cargo-such as a satellite) occupies a relatively small proportion of the rocket's total volume in the nose-cone at the top.

Then was the presentation by **Merishya** on **Computer**. A computer is generally used for the purpose of storing, processing and calculating data. Sir. Charles Babbage is considered as the father of computer. A computer consists of 3 main components; the input unit, central processing Unit (CPU) and the output unit. The input devices inputs data and it accepts the comments and sends it to the Central Processing Unit. The CPU sends it to the main internal memory. The internal memory processes it and sends it back to the CPU which then forwards it to the output device like monitor, printer or speakers. The mother board inside the CPU receives the comments from the hardware's and sends it to the processor. The processor takes the instructions given to it and executes it.

Soorya Vijay presented on **CCTV**. CCTV can be expanded as Closed Circuit Television. There are many different types of CCTV systems available: analog and digital, wired and wireless and their modes of operation vary. However, the basic components are in essence the same: a CCTV camera, a CCTV camera lens, a CCTV monitor, and cables that carry the signal from one place to another. The images collected are sent to a CCTV monitor and recorded on video tape via a VCR. The CCTV camera lens will determine how far and much detail the CCTV camera can see. The CCTV camera picks up the signal from the area being monitored, and in a wired system, the CCTV camera sends the signals through a coaxial cable to the CCTV monitor; in wireless systems, no cable is needed, instead the CCTV camera broadcasts the signal. Monitors can be watched by CCTV controllers.

X-Ray was the topic on which **Ageesha** presented. The discovery of X-rays was by a German physicist called Wilhelm Roentgen. In 1895 Roentgen discovered X-rays almost by accident. Whilst doing some experiments in which he passed an electric current through Crookes tubes, Roentgen noticed that photographic plates nearby began to glow. To discover why this occurred he placed black paper on the tube and then

switched on the current. Nearby a screen coated with barium began to glow. This caused Roentgen to believe that unknown rays produced inside the tube were passing through the paper to make this fluorescent substance give out light. Hence he named the rays, X-rays. X-rays can be generated by an X-ray tube, a vacuum tube that uses a high voltage to accelerate the electrons released by a hot cathode to a high velocity. The high velocity electrons collide with a metal target, the anode, creating the X-rays. The X-ray is turned on briefly and goes through to the film. The rays go through the skin and flesh easily, showing up as dark areas on the film, but with more difficulty through bone. They are slowed down and so these areas are much lighter.

Prabin Kumar then gave us a brief idea on the theme **LED TV**. All televisions work through back-lit projection from a light source and onto the display screen. Older televisions use standard cathode ray tubes that are set in the rear of the television and project light onto the screen, while LED (Light Emitting Diode) televisions replace the tube with small light emitting diodes to present light. LED televisions use a series of light emitting diodes to display a crystal clear picture. LEDs are much smaller than cathode ray tubes, allowing for lighter and thinner televisions to be constructed.

ELCB (Earth Leakage Circuit Breaker) was the theme on which **Kowsanth Kalidas** presented. If any current leaks from any electrical installation, there must-be any insulation failure in the electrical circuit, it must be properly detected and prevented otherwise there may be a high chance of electrical shock if-anyone touches the installation. An earth leakage circuit breaker does it efficiently.

Then was the turn of **Immaculate Rishvi** to present on the topic **Land Phone**. There are two main parts to a telephone that make it function: the transmitter and the receiver. In the mouthpiece of our telephone (the part we talk into) there is the transmitter. In the earpiece of your telephone (the part we listen into) there is a receiver. The transmitter contains a diaphragm. When we talk into our telephone, the sound waves of our voice strike the diaphragm and make it vibrate. Behind the telephones transmitter's diaphragm, there is a small container of carbon grains. When the diaphragm vibrates it puts pressure on the carbon grains and squeezes them closer together. An electrical current passes through them. Loud noises make the transmitter's diaphragm vibrate strongly squeezing the carbon grains tightly together and allowing a larger flow of electrical current to pass through the carbon. The electrical current is passed along the telephone wires to the person we are talking to. The electrical current contains the information about the sounds our telephone heard and that will be reproduced in the telephone receiver of the person we are talking to. The receiver's diaphragm acts as a speaker and allows us to hear the conversation of the person calling us.

Jefin the leader of Blue Team gave us a brief idea on the working of a **Fan**. The fan capacitor torques up the electric motor, allowing it to start and run. An electrical current reaches the motor and then enters coils of wire that are wrapped around a

metal base. As this current passes through the wire, a magnetic field is caused that exerts force in a clockwise motion that actually changes the electric energy into mechanical energy. This action causes the motor coils to spin. As the coils are spinning, the fan captures this spinning motion, transferring it to the fan blades. The slicing of the air caused by the fan blades is what pushes the air downward, causing the breeze created by the fan.

Shalomi presented on the theme **Solar Water Heater**. Solar water heaters use two natural phenomena to work: dark-coloured objects absorb heat and hot water rises. Technology has now made it possible to harness these phenomena to produce a reliable source of hot water in our homes. A solar water heater is a combination of three elements:

1. A solar collector is an energy device that is designed to absorb solar radiation and transfer the energy to the energy transfer fluid or material passing through the collector.
2. The energy transfer medium transfers the absorbed heat to the water, through conduction or convection.
3. And finally thermally insulated hot water storage vessel or geyser with a protected inner lining.

DVD Player was the topic on which **Sabrina** presented. A basic way to understand how a DVD player works is to look at its predecessor, the record player. With a record player, you can actually see a needle reading the grooves in the vinyl. Laser Reads the Disc. The data on a DVD is stored in divots in the layers of plastic. The computer inside the DVD player, using a device called an MPEG-2 decoder, translates the data from the lens into audio and digital signals, which it then parlays to your television through the audio and video connection cables. If the disc simply sat stationary in the DVD player, the laser would not be able to read it properly. Instead, the machine's motor rotates it. The DVD player also has a device that controls tracking, moving the laser outward or inward as needed to stay in the correct spot on the disc. This system makes sure that the laser reads the right data at the right time.

Mejalin Arno then gave us a brief idea about the working of **Water Pump**. Smaller electric water pumps, such as the kinds used in homes, usually have small DC motors. The DC motor is contained in a sealed case attached to the impeller and powers it through a simple gear drive. In the center of the motor is a rotor with coils around it. Around those coils are magnets, which create a permanent magnetic field that flows through the rotor. When the motor turns on, electricity runs through the coils, producing a magnetic field that repels the magnets around the rotor, causing the rotor to spin around 180 degrees. When the rotor spins, the direction of the electricity in the coils flips, pushing the rotor again and causing it to spin the rest of the way around. Through a series of pushes, the rotor continues to spin, driving the impeller and powering the pump.

Finally was the turn of **Meera** to present on the theme **Motor Cycle**. Motorcycle engines work the same way that car engines do. They consist of pistons, a cylinder block and a head, which contains the valve train. The pistons move up and down in the cylinder block, driven by explosions of a fuel-air mixture that has been ignited by a spark. Valves open and close to allow the fuel-air mixture to enter the combustion chamber. As the pistons move up and down, they turn a crankshaft, which transforms the energy from the pistons into rotary motion. The rotational force of the crankshaft is transmitted, via the transmission, to the rear wheel of the motorcycle.

At the end of these presentation, Mr. Edwin Sam stated that most of the students presented well. The presentation would have been even better if the presentations included the principle of working and if it had a block diagram. Capt. Bennet Singh added that we should clear all our doubts immediately when it arises. At a final point Mr. Velaian cited that **we must forfeit ourselves towards KAP activities to make as a real young scientist** in this one year. We must do what we can and try as much as possible. When someone corrects us we must understand it and learn from it. Corrections are for the improvement of ourselves and we must learn from it.

Conclusion

This meet developed our listening, questioning and responding skills. We came to know how the simple gadgets which we use in our day to day life works. We came to know the real caliber of all the students. By talking in front of all, my fear of talking with other peoples reduced and I was able to share my views confidently among each other. This was a day to shape all of us, which made this programme a grand fete. I express my deep sense of gratitude to the organizer, Mr. Mullanchery M. Velaian for giving us such a great opportunity. I would like to express my thanks and appreciation to KAP, Maria College of Engineering, Dr. Sujar, Mr. Perumal, Mr. Bergin, Mr. Gopalan, Mr. Thiruvengadam, Capt. Bennet Singh, Mrs. Rathika, Mrs. Babitha, Mr. Sajeeve, Mr. Edwin Sam, Mr. Sahajan, Mr. Shibin Tad and all the members of KAP for their full support which made this program successful.

Abina.S
Red Team.

It was most awaited and expected program by the KAP students. We all felt that this program is going to give us new experience and new knowledge in the field of Technology. And we were all proud to do our presentation in an Technology College of Kanyakumari District. As it was planned earlier, we all KAP students assembled at the seminar hall of the college sharply by 8:30 am. We all young scientists neatly dressed up in our uniform and furiously waiting when would the Meeting start. After a minute gap as

soon as the college principle arrived, the meeting started. I Abina. S the leader of red team was compeering this session.

The famous personalities present for this precious occasion was:

Mr. Velaian(Organizer of KAP)

Dr. Sujar(Principle, Maria College of Engineering and Technology)

Shri. Gopalan

Shri. Edwin Sam

Prof. Sajeev

Prof. Shibin

Shri. Shahajan

Mr. Perjin(Physics Teacher)

Shri. Perumal(Manager at ISRO)

Mr. Thiruvengadam

First and foremost I welcomed all the dignitaries to the dais. After Tamil Thai Vazhthu, we had the most prestigious moment that is the Lamp Lightning Ceremony. Then we moved on to the speech of the dignitaries.

First I invited the brain of KAP Mr. Velaian to give the introductory Address. He briefly explained about the principle and its noble activities apart from academic activities. He also highlighted their hospitality. He said the importance of all the dignitaries on and off the dais and welcomed them all with a pleasant smile. He also gave us some instruction on how to do this presentation without fear in a successful manner. He also stressed that we must do all the assigned work on our own and not with the help of others. He gave us a mesmerizing introductory address.

Then the principle of the college was invited to give his presidential address. He welcomed the gathering and said that this college had only 4 subjects in 2008. Then there was a development and they teach more students with more subjects in Engineering and technology. Each year they conduct an international conference in their campus. We students will have a good interaction over here. This technical presentation will benefit a lot. We must be very good in technology. We must have good goal in technological issues. He mostly asked us to find good technological innovation and concluded his speech by wishing us to present our presentation in a good way.

Mr. Perumal, manager, IPRC shared his words with us. He had opined that we must be bold enough to present it. We must present the technical matters happening in an innovative manner more clearly and that is why this program is arranged. He gave us some advice to do this presentation successfully and wished us all the best.

Mr. Berjin detailed about the mind set of students. According to him some presentations can be CUT+COPY+PASTE+PRESENT and some can be analyzed+ deeply studied and then presented. He advised us to think scientifically about the given topic as we are all young scientist students. Then after all the presentation some feed backs will be given so take

that drawbacks and try to modify such feedbacks. We should think more technically than copying from a website and shared some more views and advised and wished us all the best and concluded his speech.

Mr. Thiruvengadam was on stage to give his speech. He said that our presentation skill will be concentrated more than your admirable slides. We must present everything after understanding the topic given to us. By this short words and wishing us he concluded his speech.

Mr. Gopalan an living Encyclopedia with more knowledge encouraged us not to afraid of to present but to be bold enough to interact. He even told about the technological development in the present world and we must be proud to do such an presentation. We must be able to answer all the questions or clear the doubt asked by the audience. He ended his speech by conveying best wishes to all of us.

Finally Mr. Edwin Sam was called on to share his words to the gathering. He stressed the same and wished us all the best to do this presentation in a good manner.

After thanking all the dignitaries for giving such an motivational speech and thanked one and all present there the young scientists were invited to give their presentation one by one.

So this was the most important time as the students were called on to do the presentation. All the personalities were sitting in a circle to examine us by asking questions. First Green team was given the chance to do the presentation and the leader of green team Gby was the first to present. Her topic was Linear Power Supply. This LPS is used to give or supply power to a device. This works like this: Main Input-Transformer- Rectifier- Smoothing- Linear Regulator-Output. The disadvantages of this device is efficiency, size and weight and head dysfunction and about the transformer and then said about the device function. The feedback was given by Mr. Berjin, Mr. Edwin Sam, Mr. Perumal, Mr. Thiruvengadam, Mr. Velaian, Shri. Gopalan, Prof. Sajeev, Prof. Shubin, Shri. Shahajan.

Then Sri Ram presented on the topic Petrol Car. Karl Friedrich Benz invented it. It has a compression ratio of petrol engine. It has a speed owned efficiency. About the pistons. Its advantages is cost efficiency. .Jisfia Shifany presented on the topic MRI scan. It consists of a patient table. This MRI scan works on the magnetic principle. There is a magnet in the MRI scan. There are three types of MRI scan:

- Head MRI scan

- Chest MRI scan

- Bone and Joint MRI scan

She said about its working procedure.

Then Ashwin of green team presented on the topic neon lamp. He mentioned about the uses of neon lamp. Electricity-Ionized gas- Neon Ions- Neon atoms- fusion - Photons- Light this is the procedure of the working of Neon lamp. Neon lamp works for 15-20 years. It has power efficiency and clear visibility.

Srinidhi topic was Turbine. Turbine helps in formation of energy. Potential energy means stand still. Turbulence is a greek word. It helps in energy generation. There is a reaction turbine in which energy will be generated. There are also Gas or air craft turbine. Steam turbine are also there.

Then Kaviya presented on the topic Electric measurement counter. It counts the particles. There are five types of counter:

- Cell counter

- Binary counter

- Rig counter

- BCD counter

- Up- down counter

- Frequency counter.

This works under coulter's principle. It helps in cell identification. It can even differentiate cells.

The topic Diesel car was handled by Sruthi Krishna. This car has a diesel engine. It works as Intake- Compression- Power- Exhaust. It can give out more power. This engine is mechanically efficient.

It was Haridha's turn to present on the topic Electric Water pumping. This pumping can be used to pump oil and natural gas. This mechanism is an easy mechanism. This was the last member of green team and the chance was given then to maroon team.

First Reshma came on to speak on the topic Inverter. David Prince invented this. She said about its main drive section its electrical wave forms. About oscillator and capacitor.

Secondly Dani Rovas presented on the topic Vacuum Cleaner. This device is used to clean dust. It works on the Bernoulli's Principle. This has a high pressure. Here friction and pressure plays the major role. Here it pulls out all the dust and stores it in the vacuum bag and the waste can be discharged later.

Next Abhila came to speak on the topic Mike. Mike works by the change of energy. The two parts which play a major role are Microphone and amplifier. Here the amplifier helps in adjusting the sound.

Then Sanjana presented on the topic Emergency Lamp. This was invented by Jeff Brooks. This works on the transfer of current. She said only a few points about the topic.

Jenisha presented next on the topic Battery charger. These battery are 12 volt and rechargeable. These helps in charging of phones, light, etc..... It also consist of a transistor.

The last member Aruna came on to present on the topic Weather monitor. The different types of weather monitor are:

- Thermometer

- Barometer

Hygrometer
Anemometer
Rain gauge
Disclorometer
Cyclometer
Transminometer

The weather is also monitored by satellites. It can be polar and geostationary satellite. For example: INSAT. These polar orbiters monitor both north and south pole. After this presentation of maroon team members the chance was given to yellow team.

Edin Jijo came to present his presentation on the topic Digital Camera. KODAK was the first company to invent a digital camera in 1975. There is power button helping in capture of the photo. If the photo is taken it will be appearing in an upside down way. The photo is now even taken in mobiles. The digital camera is used for both picture capturing and video capturing.

Ragul came to present on the topic Speaker. The speaker was first invented by Alexander Graham Bell. The human speaker is the Voice box or the vocal cord. The types of speaker are:

Horn
Electro dynamic speaker
Flat panel speaker

The speaker helps in giving out the sound produced by a body.

Then Agreenishia presented on the topic Scanner. The scanner was invented by Ray Kurzweil. First it helped in producing black and white scanned images but now it helps in producing color images also. It can be shortly said as a copier as it gives the exact copy of the given image. It works on a huge circuit diagram but it is simply a copier with a uniform cover or background.

Then a presentation on the topic ECG was presented by Vishal. ECG means Electro-Cardio Gram. He said about the steps taken before taking ECG and its uses.

Then Malavika came on to present on the topic Printer. The printer was invented in 1938. It consist of an ink tank, control panel and page distribution button. It works as the command is given by the computer, the papers moves on, the ink spreads and makes the given command and sends out the exact copy on the screen of the computer.

Then Vijaya Raj presented on the topic Fire Alarm Radio. He separated the three words and gave a clear definition for each. And this innovation was a heat sensor.

The last member of Yellow team Leena presented on a chart on the topic Magnetic Train. After her turn the chance was given to the red team members.

I Abina the leader red team presented my presentation on the topic EB transformer. A transformer can be defined as a static device which helps in the transformation of electric power in one circuit to electric power of the same frequency in another circuit. The voltage can be raised or lowered in a circuit, but with a proportional increase or

decrease in the current ratings. Otto Blathy, Miksa Deri, Karoly Zipernowsky are the inventors. A transformer works on the principle of electromagnetic induction. When an alternating current flows through the primary coil, an alternating magnetic field is produced in the laminated core of the transformer resulting in generating alternating induced current in the secondary coil. The strength of the induced current produced in the secondary coil depends on the turns in both the coils. Then I explained about two types of transformers, their working and uses.

The second member of Red team Raksha presented on the topic Pen Drive. The pen drive can have the capacity to store from 250 MB to 16 GB. It fits to a pocket. It can be said as a memory controller. It has a resistor and a capacitor. It helps to get data from a computer then store it and save and can be used again by inserting to a system and also if once deleted from a pen drive then it can't be got back.

Indhuja came on next to present on the topic Tape recorder. Alexander graham bell in his Volta laboratory it was discovered. It is also said to be a reel to reel tape deck. There is a minute mike in it. It consists of a Plastic packing, Magnetic powder, Recording head, Microphone and a Loud speaker. There is an antenna which helps the radio to work. Songs can be duplicated in this innovation. Its main use is even to record and edit songs. Next Raghul came on to present on the topic Radio. It is a machine which helps to receive information. It is another source like a Television.

Then Nishanth came on to present on the topic Multi meter. The multi meter is measured using ohms or volts. Coon Jack invented it and it is used to measure multiple measures of a unit current using three basic units called ohms or volts and even ampere. Then the last member Vinoj came on to present on the topic Wet Grinder. The wet grinder was invented by Mr. Sapabathy of Coimbatore. The main aim of creating this was on seeing the difficulties of his wife while grinding and invented and presented her. This helps in grinding of things, paste or powder form. After red team the chance was given to Blue team.

The first member to present was Akshaya on the topic wrist watch. This was invented by Patek Philippe at the end of 19th century. It shows the time. It works like a simple pendulum and the time is showing according to oscillation. She said about its merits and demerits.

Secondly Ashmi came on to speak on the topic Offset printer. It gives a high quality images. It also helps in printing of flex of large and small size. It works like a printer but a larger one.

Then Syana came to present her presentation on the topic AC(Air Conditioner). It was invented on 17th July in 1902 by Wills Carrier in an American company. Air conditioner the principle is same. It consists of three main parts namely:

- Compressor
- Condenser
- Radiator

These are the main three components of an AC and these functions the operations.

Next Rudra came to do her presentation on the topic Television. John Logie Baird is the inventor. She said about the uses of TV. There is demodulator filter and also said about the merits and demerits of a television. The television is a very useful machine.

Then Aglin Bala presented on the topic Train. There are three types of engine:

Steam engine

Diesel engine

Electrical engine.

She showed some images of train.

Neat Shyan Sagar presented his presentation on the topic Tube light. The Tube light consist of a choke and a ballast. This choke takes 40 volt out of 230 volt. There are three types of choke:

Copper choke

Polyester choke

Electrical choke

Then the last member of blue team Naveen Jith came on to speak on the topic Bicycle. This is a vehicle running due to human power. This was used in early days were some of the points covered by him. This was the last presentation of this program. The feedbacks were given by:

Dani Rovas - Maroon team

Indhuja- Red team

Srinidhi- Green team

Ragul- Yellow team

Rudra- Blue team

Then the feedback was given by Mr. Bergin, Lekshmi (Former Young scientist), Mr. Velaian.

Mr. Velaian told the overall thanks and informed us about the next program and said the instructions for the next program. And then we had the national anthem and finished our meeting in a good manner. The students who were not present on 14-2-2015 were asked to present on 15-2-2015 at the same college 2:00 pm.

The next day all the other students who didn't present and some of the students who presented also assembled for the meeting including me. Mr. Velaian gave a small introduction and then the meeting started with the students presentation. The judges who were there to judge was Mr. Bennet Singh, Mr. Velaian, Mr. Edwin Sam, Mr. Shibin. They said the feedback after all the presentation.

First Jereshea of Maroon team presented her presentation on the topic Refrigerator. Oliver Evans invented this in 1804. It helps in preserving food from bacterial growth. It consist of a Compressor, Condenser, Ventilation Fins, Expansion device, Evaporator(Vapor compression). She said about its working principle, protection and maintenance, Merits and demerits.

Then Abhirami spoke on the topic Stop Watch. Samuel Watson is the inventor of this. She said about its purpose, working principle and clock pulse.

Next Iona Theresa Raj presented on the topic Rocket. Honstantin Tsiolkovsky is the finder of rocket. The first rocket was named as Nell. It works on the principle of Sir. Isaac Newton's third law. She showed a block diagram also.

Mereshia came on next to present a presentation on the topic Computer. It is an electronic machine which was invented by Charles Babbage. She also explained its Block diagram and its merits and demerits.

Then Surya Vijay presented her presentation on the topic CCTV. Walt Brunch is the inventor of CCTV and said about its function.

Then Prabin Kumar presented his presentation on the topic LED TV. He showed a block diagram and explained some of its uses.

Next Kalidas showed a presentation on the topic ELCB. ELCB means Earth Leakage Circuit Breaker. There are two types of ELCB:

- Voltage ELCB

- Current ELCB

Then he said about its advantages and disadvantages.

Next Immaculin Rishvi presented her presentation on the topic Land phone. She said about the telephone line. The telephone has two parts:

- Transmitter

- Receiver

Then Jefin presented a presentation on the topic Fan. Philip Dietel was the inventor of fan. Then he said about the uses of the fan. There are two parts of a fan they are:

- Electric motor

- Blades

The fan works on the electromagnetic induction.

Shalomi came to present her presentation on the topic Solar water Heater. She said about the working of solar water heater. The three main parts of a solar water heater are:

- Boiler

- Tank

- Solar collector

Then Sabrina of red team was called on to present her presentation on the topic DVD. This device is used to play new things and said about its working process.

Mejalin Arno then presented his presentation on the topic Water pump. It was found James. It works on the principle of Centrifugal pump. AC power- Motor- Impeller(Rotator).

Then it was the last presentation of the day. The last presentation was about Motor cycle. She said mostly about the working of the engine and said the function of Piston.

She showed only the circuit diagram. Feedbacks were given by Mr. Edwin Sam, Mr. Bennet Singh and Mr. Velaian. Then Mr. Velaian gave a vote of thanks to the gathering. The meeting got over by 5:00 am. We all went back happily with a pond of knowledge. We all gained a lot from this program. All the presentation on each innovation really impressed as indeed and made us feel like a technical scientist. We all had a good interaction by questioning and asking our doubt about the topics. We all had a great time at the college with a good hospitality. Thanks to KAP and Maria college for giving this precious opportunity. Hats off to KAP!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!

nived sankar
Red Team

The only source of knowledge is experience". The experience is the source of knowledge. KAP is providing different oppertunities to develop our knowledge. They conducted several programmes to develop our skills, among them there was a programme conducted at MARIA College of engineering to develop our PowerPoint skills. After the detail study of Space Science and Technology at IIST, the next programme was held at MARIA College of Engineering, Attoor. I was waiting to attend the programme, then the day came suddenly. I arrived the college sharply at 8:00am. With my friends, I entered the seminar hall with full of excitement and expectation.

Before starting the programme Mr. Velaian, the brain of KAP gave some information about the next programme to held on February 28(National science day) at SIGMA College of Architecture. The concept is Scientific Development in India. ` We must add the comparison between the previous invention and the given topic. For example: if PSLV is the topic we should add the comparison between the last invented satellite with PSLV. We should cover all the points about the given topic. We can ask the doubts to the scientists, other guide teachers also. We should do our work ourselves.

The programme started by 9:15AM with Tamizh Thai Vazthu. Abina, red team leader got the chance to anchor this session. The dignitaries of this programme are

Mr. Sujar- principal of the college,

Mr. Perumal, one of the worker in IPRC,

Mr. Velaian, the brain of KAP,

Mr. Sibin Tad- NI University, Kumarakovil Mr. Edwin Sam - social scientist

Mr. Gopalan- administrative officer of excel institutions.

Mr. Merjin- ISRO

As a symbol of removing darkness and enlighten with more knowledge, all the dignitaries lighted the Kuthuvilakku. Abina briefed about the MARIA College, it is college of engineering and technology and is one of the prestigious college in Kanyakumari district.

Introductory address was given by Shri. Velaian. He told that the programmes which are conducted by KAP is very useful for developing our knowledge. In the last year the college students of this college were also watched the PowerPoint of the KAP students. He said that Shri. Sujar having interest to conduct the programmes of KAP. He mentioned about the successful rocket of India called PSLV, he introduced Mr. Merjin who is working there. He gave some information about a great personality, Thyagaswamy. If he hears any wrong information in radio he will suddenly call the radio station and correct it. This is the second experience for the students to present a PPT with the help of KAP. He informed us the award presentation is going to hold on April month.

Followed by Shri. Velaian's speech, Shri. Sujar gave a talk. This college was started in 2008. There are many National Conference were held here. Nowadays, the PowerPoint presentation is important for students in Schools, Colleges and institutions. Finally he encouraged us to do our PowerPoint presentations well. Because of scientific growth we are getting all the information about our world rapidly. He narrated a quote

"Learning creates Creativity; Creativity gives Knowledge, Knowledge make as Great."- Abdul Kalam.

He told that we can develop our knowledge with the help of KAP.

After the speech of Shri. Sujar, Shri. Perumal gave a talk. He asserted about the scientific growth in India . India has developing the technology in high level. The college students are trying hard making a presentation, but KAP provides the opportunity in the Grade of 8th itself. At last he encouraged us to present our PPTs in a correct manner and concluded his speech.

Shri. Merjin gave an informative talk. In that, he mentioned that the types of Presentations. He raised a question how we want to think scientifically? He answered that

- Find out the problem,
- Make suggestions,
- Analyse,
- Collect Information,

If we did the following things in a correct manner, we will get the right solution. We should accept the negatives of our presentation and then modify it. We must develop

the mentality to accept failures. We want to thank KAP for providing the opportunity to develop our Presentation skills.

Mr. Thiruvengadam gave a small talk. He told that we should accept all negative feedbacks and correct ourselves. KAP's programmes will develop our skills.

After that Shri. Gopalan gave a speech. In that, he asserted that this KAPs programmes will help us in future in colleges, jobs etc. for a four years child is also having technological knowledge, for example if we give a mobile phone to a small child, it will open all the options in that mobile phone. He said that we should discuss the given topic with the scientists of KAP, guide teacher and team coordinators. He told about a 12 years age child who is studying in excel school. He asked a doubt to the teacher every day about the rail accident happening, and questioned is there is no way to prevent it. The teacher told him to find out the solution for this incident. He invented the Automate rail system: when the train comes, the vibration is absorbed by the subways, the signals are sent to this, automatically the machine closes the wallet with magnetic action.

Followed by Shri. Gopalan, Shri. Edwin Sam gave a talk. He told that KAP is providing us more chances to improve our Knowledge, talent etc. he said the types of skills:

- Information gathering skill,
- Reporting skill,
- Experimental skill,
- Communicating skill.

He also described that the

Gadgets surround us are

Given to 56 students as

Topics.

Now it is the turn for the young scientist students to perform their PPTs. The first chance was given to Green team. For this session Lakshmi, former young scientist anchored this session.

Gby Atee, the leader gave a presentation about linear power supply. She said that this is an electric equipment use to supply the current. She told a disadvantage that this weigh huge.

Followed by Gby Atee, Sreeram gave a presentation about Petrol Car. He told that, the petrol car's engine is 2 stroked. He said that this is so costly and it releases smoke.

After that Jeshwini, co-leader gave a talk about MRI scan. She said that this was invented by Paul C. Lauterbur. MRI scan is used to detect the parts of body.

Aswin gave a presentation about Neon lamp. He said that this is used in industries etc. He added that this takes more electricity and the light emits red colour.

After the tea break, Srinidhi gave a presentation about turbine. She explained that turbine is also used in wind mills. She said the working principles of a turbine.

Next Kavya Sree got the chance to perform her presentation about Electric counter. It is also called as coulter counter, which is used to count the micro-organisms.

Followed by Kavya Sree, Sruthi got the chance to perform her presentation about Diesel car. She gave some ideas about the diesel engine and also the working principle of Diesel engine.

After the presentation of Sruthi, the next it is turn for Haridha to present a presentation about Electrical Water Pumping. She said that the water is pumped with a help of electric motor.

Then Maroon team got the chance to perform their PPTs.

Reshma, leader gave a PPT about inverter. She said that battery charger is needed for maintaining the invertors' efficiency into a long time.

Dany Roves, co-leader performed a PPT about Vacuum Cleaner. This is used to clean the dust particles in the floor. There is a fan fixed near the dust bag which intake the dust.

Abila gave present a presentation about microphone. She said that microphone converts the sound signals into electrical signals and send it to the speaker the speaker converts the electrical signals into sound signals.

Sanjana gave a talk about Emergency Lamp. The emergency lamp need to be charged, it will works only for 24 hours after that we want to charge it again.

Jenisha got the next chance to perform her presentation about Battery Charger. She said that this is used in different sources like mobile phones, invertors' etc...

Next it is the turn for yellow team to present their PPTs.

Edin Jijo got the chance to present his PPT about Digital camera. He talked about memory fixed in the side of the camera where the photos or videos are stored.

Rahul gave a talk about Speaker. He told that because of the vibration the magnet start to move. The electric signals are converted in to Sound signals.

Followed by Rahul, Argenishya gave a talk about Scan. She told that the scans are mostly used in hospitals. She said this is so costly and this weigh huge.

After the Lunch break the PPTs of Young scientist students were started again. Vishal gave a talk about ECG.

Malavika gave a talk about printer. She said the working principles and also that this have ink cartridges, where the ink is stored.

After that Lena gave a talk about Magnetic train. She said that magnet in the guide ways creates both lift and propulsion when vehicle travels.

Then it is the turn for red team to present their PPTs.

Abina, the leader gave the first talk in red team about EB Transformer. She explained about Step down Transformer and the Step up Transformer . After that Raksha gave a talk about Pen drive. She told that 250 MB to I6 GB is the storage levels. The pen drive has the parts of pen drive that capacitor, resistor, micro controller and led light.

After the tea break, Induja, co-leader gave a talk about Tape recorder. She said that there is magnetic powder where the sound will store, if we press the delete button the magnetic powder will erase.

Followed by Induja, Pradeep Narayanan gave a talk about robot. He revealed that nowadays the robots are used in factories, industries etc... this is also useful to research in space.

As a red team member I also presented my PPT about Network Switch. I said that MAC address (Media Access Controller address) will be useful to send the data to a particular person.

Rahul gave a talk about Radio AM/FM. He informed that this was invented by Marconi. He also told that this is useful to publish news.

After that Nishanth gave a talk about Multimeter. The latest model Multimeter is easy to handle. He said that there is only one disadvantage that is, it can be used only by who know the operations of this equipment.

Followed by Nishanth's talk, Vinoj got the chance to talk about Grinder. He said that this useful to grind nuts, rice, wheat etc. He said that there are two granite stones attached with this which do the grinding.

Next it is turn for the blue team members to perform their PPTs.

Akshaya gave the first talk in blue team about Wrist watch. She said that it is tough to handle the wall clock when we travel to some other place.

Followed by Akshaya's talk, Ashmi got the chance to perform her PowerPoint about Offset Printer.

Seana got the next chance to present her PPT about air conditioner. She said that this has a fan which intake the hot air and releases cold air.

Rudra Sathish got the next chance to perform her PPT about Television. She said that TV is useful to publish the general information. There is only one disadvantage that if we totally involve with it, time will be wasted.

Followed by Rudra Sathish's talk, Aglin Bala gave a talk about Train. She said that first invented train is steam engine, which works with the burning of Coal.

Shyam Sager gave a talk about Tube Light. He said that the tube light has a part called Choke. The choke control the limit of current.

Followed by Shyam Sager, Naveenjith gave talk about bicycle.

A student of that college told few words about this PPT session. He said that every students did their PPT well. They have done a great job at this tender age.

Feedback of this session was given by Dany Roves, Indhuja, Srinidhi, Rahul and Rudra Sathish.

Shri. Merjin gave a talk about our PPTs. He said that the main mistake done by us that Most of them write the information in a big Paragraph. He advised us that to avoid the paragraphs in PPT.

Lakshmi, former young scientist gave some commands about our PPT. She said that we did our PPTs well and some of them are awesome. She gave some tips to present a PPT. we should make the information in brief. We should face the audience and not to think this is so difficult.

The programme was concluded by National Anthem.

2nd day

Many of them not attended the first day Programme. They got a beautiful chance provided by KAP that in 15/2/2015 there is a programme for the students who have not attended the first day programme.

I had entered the same seminar hall at 1:55pm sharply with my friends. The programme started nearly at 2:10pm. There is one more dignitary present in this programme, Capt. Benet Singh. Shri. Velaian gave the introductory address. In that address he told that the students who are sending the reports regularly, they attended today's programme correctly. If we ask doubts to different peoples we get the total idea about it. We should prepare our works own.

Then the PPT session started. Jerishea, maroon team member got the first chance to perform her PPT about Refrigerator. She said that refrigerator is useful to store the food for a long time. This takes more current is the disadvantage.

Followed by Jerishea, Abirami who is yellow team Leader gave talk about Stopwatch. She said that this is usually handled by the sportsman. It has two buttons that one is to start the counting of time and other is to stop the counting of time.

Iyana, green team member gave a talk about Rocket. She told that this is mostly used to send the Satellites to Space. She said that the PSLV is the successful rocket send by India.

Merishea, co-leader of yellow team gave a talk about Computer. She explained about the Expansion of ALU that Arithmetic Logic Unit.

Soorya Vijay, green team member got the chance to perform her PPT about CCTV. She informed that the expansion of CCTV is Closed Circuit television.

Ageesha got the next chance to present her PPT about X-ray. She said that X-ray machine is mostly used in Hospitals and it is useful to see the bone fractures.

Prabin Kumar gave a talk about Led TV. He gave the expansion of LED as Light emitting diode. He also told that this is similar to LCD.

Followed by Prabin Kumar, Kalidhas who is a Maroon team member gave a talk about ELCB. He said that ELCB is Earth Leakage Circuit Breaker.

Immaculate Reshvi gave a talk about Land phone. She said that this is usually called as Telephone. This is useful to communicate each other even from a distance.

After that Jefin, blue team leader gave a talk about Fan. He said that fans are having three blades and they are in different angles. In few fans, if the fan rotates in clockwise it give cool air and if it is anticlockwise it give Hot air.

Shalomi, co-leader of blue team gave a talk about solar heater. She told that the sun is the alternative source of energy. She also told that this is used for boiling water.

Sabrina, red team member gave a talk about DVD Player.

Mejalin Arno, red team member gave a talk about water pump. He said that the water is pumped with the help of electric motor.

Sreemeera explained her topic Motor cycle with a diagram she said that in the bike the engine is 2 stroked. There is a chain connected in the gear which is connected the wheel.

After the PPT session some of our dignitaries said the opinion of today's programme.

First Shri. Edwin Sam said that all the presentations are good. Don't think that the PPT is an Essay. Today, what are the technological Principles, Functions, Uses, were not added in the PPT. But according to our stage this a great job.

Capt. Benet Singh said that we should prepare all the information correctly. You can ask the doubts to different peoples.

Shri. Velaian said that we can develop our knowledge with the help of KAP. We should avoid other activities for this year. Finally he thanked MARIA College of Engineering.

Hearty thanks to MARIA College to providing these facilities to us. I also thank KAP to providing the opportunity to express our skills.

Thanks

**S.DANI ROVAS,
MAROON TEAM**

Science is nothing but everything around us. Only when we understand the science behind everything, we can be aware of the world around us. Science develops along with the growth of technology. The skill of analyzing the basic understanding of technology along with the development in Science is essential these days. In order to do so, a TECHNICAL PRESENTATION ON SCIENCE AND TECHNOLOGICAL INNOVATIONS BY YOUNG SCIENTISTS was held at Maria College of Engineering and Technology on 14 and 15th of February, 2015.

14/02/2015

It was exactly 9.00AM, when Mr.Mullanchery M.Velaian, the founder, patron and lifeblood of KAP was on stage to inform about the next meet of Scientific Development in India. I hope that the forthcoming meet will make me aware of how the development in Science is making our life comfortable. He also gave us a number of advices to craft our presentation into a triumphant one.

Inaugural Session

From the words of Abina, Red team leader, true beauty of welcoming someone was indeed magnificent on that fine morning. She gave away the welcome speech and received all the dignitaries. The distinguished personalities present were:

- 1) Dr.Sujar - Principal, Maria College of Engineering & Technology
- 2) Mr.Mullanchery M.Velaian - Organizer of KAP
- 3) Mr.Perumal - Test Manager, ISRO
- 4) Mr.Bergin - Physics teacher
- 5) Shri.P.Gopalan - Headmaster Rtd
- 6) Shri.L.Edwin Sam - Social Scientist
- 7) Shri.S.Thiruvengadam - Employment officer Rtd
- 8) Shri. M.C.Shibin Tad - NI University Kumarakovil
- 9) Shri.T.M.Sahajan - ISRO Propulsion Complex Mahendragiri

10) Shri.C.Sajeev

Following Abina, Mr.Mullanchery M.Velaian gave the Introductory Address. He gave a thought provoking speech. The presentation widens our knowledge. Presentations like these are endowed with to us by KAP to perk up the confidence level of students. He expressed his sincere thanks to Maria College of Engineering and Technology in his talk. He further welcomed one and all gathered.

Dr.Sujar, Principal Maria College of Engineering & Technology, sowed the seeds of contemplation within us. KAP is making the rare opportunities of presentation available to the Young Scientists. We are lucky enough to be blessed with these kinds of opportunities, so it is the duty of the young scientists to utilize these opportunities in a fruitful manner in order to develop our presentation skills and researching aptitude. Life is a race. If we want to win the race of life,

Next Mr.Perumal, Test Manager ISRO, gave a brief talk. India is undergoing several developments these days due to the advancement in Science. When we research under certain topics, we should gather the appropriate information from various sources and analyze it. Whenever new technologies are being innovated, it is first being designed and then tested. He wished us best of luck to present the presentation. With that he concluded his talk.

Mr.Bergin, Physics teacher, addressed us with his talk. There are two ways to present. The first one is cut, copy, paste, present method and the other is research, think, analyze, study, innovate and present method. Most of the students follow the first method which is easier but the wrong method. He advised us to follow the second method. People who follow the first method must think scientifically. Scientific way of thinking means identifying a problem, giving of suggestions and finally finding of solutions. The opportunity of technical presentation develops the skill of presenting and our researching skills. Whenever the feedbacks for our presentation are given we should be happy about our positive remarks but at the same time accept the negatives side. This is because the negatives pave way for our growth while positives only encourage us a bit. Thus he terminated his talk.

Shri.S.Thiruvengadam, Employment officer Rtd, said that to complete our growth, the acceptance of the negatives is a must. Shri.P.Gopalan, Headmaster Rtd, gave a piece of advice. KAP feeds us with scientific temper. We should satisfy the hunger of scientific temper with the assistance of scientific thought. Shri.L.Edwin Sam, Social Scientist, spoke that only when we ask questions, we can improve and can guide ourselves in the path of improvement and can develop our skills. Technical presentation makes us aware of how the gadgets around us work. He concluded his talk by passing on good wishes to us. With his the Inaugural presentation came to an end and the Presentation session began.

Presentation Session

Gby Atee was given the opportunity to present first. Her topic was 'Linear Power Supply'. A power supply is a component that provides power to an electrical device. The simplest design of power supply is the linear power supply. An Input transformer that serves to isolate the power supply from the main inputs take its source power from an AC mains input. A rectifier converts the AC to DC. The arrangement of a rectifier at the input, guards against inverse connection of the supply. The next process of smoothing smoothen the varying voltage level. A linear power supply works by taking in power from an electrical outlet and putting it through a transformer, where it is turned into a lower voltage of power. So the 120 volts coming in from the wall circuit become 19 volts of AC power. The next step is a process called rectification. During this process, the AC power is changed and filtered until it becomes DC power. Finally, the DC power goes through a smoothing step that gets rid of any leftover variations in current. To give a properly regulated power supply as an output the linear regulator is used. The linear regulator makes the output more uniform.

Next Sree Ram presented on the topic 'Petrol Car'. A petrol engine is an internal combustion engine with spark-ignition, designed to run on petrol and similar volatile fuels. The internal combustion engine is an engine in which the combustion, or rapid oxidation, of gas and air occurs in a confined space called a combustion chamber. This exothermic reaction of a fuel with an oxidizer creates gases of high temperature and pressure, which are permitted to expand. The defining feature of an internal combustion engine is that useful work is performed by the expanding hot gases acting directly to cause pressure, further causing movement of the piston inside the cylinder. All internal combustion engines depend on the exothermic chemical process of combustion: the reaction of a fuel, typically with air, although other oxidisers such as nitrous oxide may be employed. All internal combustion engines must achieve ignition in their cylinders to create combustion. Typically engines use either a spark ignition method or a compression ignition system. The functional parts of a petrol engine include Spark plug, Valves, Pistons and Piston rings, Connecting rod and Crankshaft and Sump. The energy supplied by the engine will be used by the car for its functioning.

Jisfia was infact superb in her presentation on her topic 'MRI Scan'. An MRI (or magnetic resonance imaging) scan is a radiology technique that uses magnetism, radio waves, and a computer to produce images of body structures. MRI Scan was invented by Raymond Vahan Damadian. To perform a study, the patient is positioned within an MRI scanner which forms a strong magnetic field around the area to be imaged. In most medical applications, protons in tissues containing water molecules are used to create a signal that is processed to form an image of the body. First, energy from an oscillating magnetic field is temporarily applied to the patient at the appropriate resonant frequency. The excited hydrogen atoms emit a radio frequency signal which is measured

by a receiver coil. The radio signal can be made to encode position information by varying the main magnetic field using gradient coils. As these coils are rapidly switched on and off they create the characteristic repetitive noises of an MRI scan. The contrast between different tissues is determined by the rate at which excited atoms return to the equilibrium state. Exogenous contrast agents may be given intravenously, orally or intra-articularly. MRI requires a magnetic field that is both strong and uniform. The lower field strengths can be achieved with permanent magnets. In short, the magnet creates a strong magnetic field that aligns the protons of hydrogen atoms, which are then exposed to a beam of radio waves. This spins the various protons of the body, and they produce a faint signal that is detected by the receiver portion of the MRI scanner. The receiver information is processed by a computer, and an image is produced.

Aswin Kumar lighted our mind with some basic physics and chemistry about the working of 'Neon Lamp.' A neon lamp is a sealed glass tube filled with neon gas, which is one of the so-called "noble" (inert or unreactive) gases on the far right of the Periodic Table. There are electrical terminals at either end of a neon tube. At one end, there's a negative terminal ("-ve", shown blue); at the other end there's a positive terminal ("+ve", shown green). When the tube is switched off, it contains ordinary atoms of neon gas (brown circles). Rig the terminals up to a high-voltage power supply and switch on, and you'll literally start pulling the neon atoms apart. Some of the atoms will lose electrons to become positively charged ions (big green dots). Being positively charged, these neon ions will tend to move toward the negative electrical terminal. The electrons the neon atoms lose (small blue dots) are negatively charged, so they hurtle the opposite way toward the positive terminal at the other end of the tube. In all this rushing about, atoms, ions, and electrons are constantly colliding with one another. Those collisions generate a sudden smash of energy that excites the atoms and ions and makes them give off photons of red light. So many collisions happen with such rapidity that you get a constant buzzing of red light from the tube. You also get quite a lot of energy given off as heat. If you've ever stood near a neon light, you'll know they can get very hot. That's because the atoms are giving off quite a bit of invisible infrared radiation as well as visible radiation.

Srinidhi did her presentation on the topic 'Turbine'. . A turbine is a rotary mechanical device that extracts energy from a fluid flow and converts it into useful work. A turbine is used to generate electricity. It converts kinetic energy to electrical energy.

- Wind turbines: When the wind hits the blades, it rotates it thus turning the generator to convert the mechanical energy to electrical energy.
- Steam turbines: Water is boiled and the steam produces is used to turn the turbines. The turbine rotates the generator which converts the mechanical energy to electrical energy.

- Water turbines: The force of the water turns the turbines which in turn rotate the generator to convert the mechanical energy to electrical energy.

We measured Kavya's skill of presentation and ranked excellent when she presented on her topic 'Electric Measurement Counter'. It is an apparatus for counting and sizing particles in suspension in electrodes. It is used for cell bacteria and virus particles. A typical coulter counter has one or more micro channels that separate two chambers containing electrolyte solutions. The counter detects these changes in electrical resistance. It works under Coulter's principle which states that particles pulled through an orifice concurrent with an electric current, produce a change in impedance that is proportional to the volume of the particle traversing the orifice. This pulse in impedance originates from the displacement of electrolyte caused by the particle. Its primary section being the quick and accurate analysis of complete blood counts [often referred to as CBC] the CBC is used to determine the number or proportion of white and red blood cells in the body. The coulter was named for its inventor, Wallace H. Coulter. The principle has found commercial success in the medical, particularly in Hematology, where it can be applied to count and size the various cells that make up whole blood. It is a vital constituent of hospital laboratory. 'Coulter's principle' refers to the use of an electrical field for counting and sizing dilute suspensions of particles in conducting liquids. There are many types of counters like Cell Counter, Binary Counter, Ring Counter, Bcd Counter, Up-down Counter and Frequency Counter.

We got detailed information about 'Diesel Car' when Shruthi Krishna was on stage. When the key of ignition is turned on, the engine builds up enough heat in the cylinders for satisfactory starting. Turning the key begins a process in which fuel is injected into the cylinders under such high pressure that it heats the air in the cylinders all by itself. When you step on the accelerator fuel pumps deliver the fuel from the fuel tank to the engine. On its way, the fuel passes through a couple of fuel filters that clean it before it can get to the fuel injector nozzles. Proper filter maintenance is especially important in diesels because fuel contamination can clog up the tiny holes in the injector nozzles. The fuel injection pump pressurizes fuel into a delivery tube. The fuel, air, and fire meet in the cylinders. While the preceding steps get the fuel where it needs to go, another process runs simultaneously to get the air where it needs to be for the final, fiery power play. Combustion spreads from the smaller amount of fuel that's placed under pressure in the pre-combustion chamber to the fuel and air in the combustion chamber itself.

Haridha presented on 'Electrical Water Pumping'. An electrical water pump is a machine that draws water into itself through an entrance port and forces the water out through an exhaust port. The impeller in the electrical water pump spins very fast. The curved blades channel water into the eye, or center of the impeller, but that water flows along to the outside of the blades. Because the impeller moves fast, the centrifugal force

compresses the water against the outside of the blade. This pressure causes the water to rocket forward in a high-speed jet out of the impeller. This speed creates pressure on the outlet side of the pump, pushing the water through the pipe. Smaller electric water pumps, such as the kinds used in homes, usually have small DC motors. The DC motor is contained in a sealed case attached to the impeller and powers it through a simple gear drive. In the center of the motor is a rotor with coils around it. Around those coils are magnets, which create a permanent magnetic field that flows through the rotor. When the motor turns on, electricity runs through the coils, producing a magnetic field that repels the magnets around the rotor, causing the rotor to spin around 180 degrees. When the rotor spins, the electricity in the coils flips, pushing the rotor again and causing it to spin. Through a series of pushes, the rotor continues to spin, driving the impeller and powering the pump.

Reshma gave a clear idea about the working of 'Inverter'. An inverter is used to produce an un-interrupted 220V AC or 110V AC supply to the device connected as the load at the output socket. The inverter gives constant AC voltage at its output socket when the AC mains power supply is not available. When the AC mains supply is available, the AC mains sensor senses it and the supply goes to the Relay and battery charging section of the inverter. AC main sensor activates a relay and this relay will directly pass the AC mains supply to the output socket. The load will be driven by the line voltage in this situation. Also the line voltage is given to the battery charging section where the line voltage is converted to a DC voltage then regulated and battery is charged using it. There are special circuits for sensing the battery voltage and when the battery is fully charged the charging is stopped. In some inverters there will be a trickle charging circuit which keeps the battery constantly at full charge. When the AC mains power supply is not available, an oscillator circuit inside the inverter produces a 50Hz MOS drive signal. This MOS drive signal will be amplified by the driver section and sent to the output section. Transistors are used for the switching operation. These Transistors are connected to the primary winding of the inverter transformer. When these switching devices receive the MOS drive signal from the driver circuit, they start switching between ON & OFF states at a rate of 50 Hz. This switching action of the Transistors cause a 50Hz current to the primary of the inverter transformer. This results in a 220V AC or 110V AC at the secondary of the inverter transformer. This secondary voltage is made available at the output socket of the inverter by a changeover relay. Inverter contains various circuits to automatically sense and tackle various situations that may occur when the inverter is running or in standby. This automation section looks after conditions such as overload, over heat, low battery, over charge etc. Respective of the situation, the automation section may switch the battery to charging mode or switch OFF. The various conditions will be indicated to the operator by means of glowing LEDs or sounding alarms. In advanced inverters LCD screens are used to visually indicate the conditions

Next was my chance to present on 'Vacuum Cleaner'. Vacuum Cleaner is a device that uses an air pump to create partial vacuum to suck up dust and dirt. It was invented in the year of 1901 by Hubert Cecil Booth, who is a British engineer. Vacuum Cleaner functions using 2 main principles. First electricity is supplied to the motor. The motor converts the supplied electrical energy to mechanical energy. The motor is connected to the fan. The fan is considered as the heart of the vacuum cleaner. The fan has angled blades like an airplane propeller. When the mechanical energy is produced, the fan starts to rotate. In an airplane propeller, it does not push air behind it. Similarly, the fan with angled blades forces air forward. When air particles are driven forward, the density of particles and the air pressure increases in front of the fan and decreases behind it. This makes the fan cause partial vacuum behind it. Next process suction is under the principle of Bernoulli's law. Bernoulli's law states that 'objects under high pressure, tend to flow to an area of low pressure until the forces equal out'. Suction is the production of a partial vacuum by the removal of air in order to force fluid into a vacant space. The region with fewer molecules has high speed and the region with more particles has less speed. As the speed of air increases, the pressure decreases. Air will always flow from a high-pressure area to a low-pressure area, to try to balance out the pressure. So the higher pressure air from outside the vacuum rushes in through the intake port to replace the lower-pressure air. As long as the fan is running and the passageway through the vacuum cleaner remains open, there is a constant stream of air moving through the intake port and out of the exhaust port. The air from the atmosphere along with the dust particles is sucked in through the intake port. Friction carries the dirt into the vacuum bag. Friction is the kind of force exerted by the rubbing of objects against each other. Most vacuum cleaners that are made today have brushes to loosen up the dirt and make them more effective. Vigorous beating and brushing loosens dirt from the carpet and floor. This is because of friction as more the two surfaces come into contact, more the friction is produced. A vacuum filter plays an integral part in the life of a vacuum cleaner. To separate the dust from air a filter is placed in the housing of the vacuum cleaner. The dust that stays back as the residue is stored in the porous (permeable) bag. The air that moves out as the filtrate is exhausted through the exhaust port of the vacuum cleaner.

Then Abila performed well when she gave her presentation on 'mike'. Microphones are a type of transducer - a device which converts energy from one form to another. Microphones convert acoustical energy (sound waves) into electrical energy. When you speak, sound waves created by your voice carry energy toward the microphone through air, that act as the medium. Inside the microphone, the diaphragm moves back and forth when the sound waves hit it. The coil, attached to the diaphragm, moves back and forth as well. The permanent magnet produces a magnetic field that cuts through the coil. As the coil moves back and forth through the magnetic field, an electric current flows through it. The electric current flows out from the microphone to an amplifier or sound

recording device. By using this current to drive sound recording equipment you could amplify the current and then feed it into a loudspeaker, turning the electricity back into much louder sound.

Sanjana made the working of 'Emergency lamp' clear to all of us. An emergency light is a battery-backed lighting device that switches on automatically when a building experiences a power outage. Emergency lights are standard in new commercial and high occupancy residential buildings, such as college dormitories. The working states of such a device, is that first when there is normal power supply, the lamp does not work, but the battery starts charging. When the power supply is cut off then the battery starts powering the lamp. When the power supply returns, the battery supply to the lamp is cut off, and the battery starts charging again.

We were charged a lot to our brain from the words of Jenisha about 'Battery Charger'. It is a device for charging or recharging batteries. The components include:

- transformer
- bridge rectifier
- capacitor
- voltage regulator
- 12V rechargeable battery
- diode
- LED zonek diode
- transistor
- resistor
- buzzer

The charge circuit is build around voltage regulator and transistor. Main supply 230V is step-downed using step-down transformer then rectified and filtered out. The DC voltage is then fed to the voltage regulator. 12V rechargeable battery is connected at the output of voltage regulator, which is charged when main power is available. The circuit itself indicates the charging status.

Aruna presented on 'Weather monitor'. Anemometer vane measures wind direction. Wind cups measure wind speed. Rain collector measures the amount of rainfall. UV and solar sensors measure radiation of wavelengths. Sensor Interface Module is powered by a solar panel and transmits sensor readings to an indoor base station. Radiation shield contains temperature and humidity sensors. The weather satellite is a type of satellite that is primarily used to monitor the weather and climate of the Earth. Satellites can be polar orbiting, covering the entire Earth asynchronously, or geostationary, hovering over

the same spot on the equator. Weather satellites carry instruments called radiometers (not cameras) that scan the Earth to form images. These instruments usually have some sort of small telescope or antenna, a scanning mechanism, and one or more detectors that detect either visible, infrared, or microwave radiation for the purpose of monitoring weather systems around the world. The measurements these instruments make are in the form of electrical voltages, which are digitized and then transmitted to receiving stations on the ground. The data are then relayed to various weather forecast centers around the world, and are made available over the internet in the form of images. Because weather changes quickly, the time from satellite measurement to image availability can be less than a minute. Most of the satellites and instruments they carry are designed to operate for 3 to 7 years, although many of them last much longer than that.

Edin Jijo explained the functioning of 'Digital Camera'. Digital cameras are used to take images by a series of sensors that are arranged in a grid. When all the individual pin-prick of colors called pixel are put together they make a picture. The more pixels that are used the better the quality of the image. The camera records what each of the individual pixels has captured in storage. The main parts of a digital camera includes power button, menu button, shutter release button, timer, flash, and zoom control.

Raghul presented on the topic of 'speakers'. Speakers help mass communication. When things shake about, or vibrate, they make the sounds we can hear in the world around us. At the front of a loudspeaker, there is a fabric, plastic, paper, or lightweight metal cone (sometimes called a diaphragm). The outer part of the cone is fastened to the outer part of the loudspeaker's circular metal rim. The inner part is fixed to an iron coil (sometimes called the voice coil, colored orange in the diagram) that sits just in front of a permanent magnet (sometimes called the field magnet, and colored yellow). When you hook up the loudspeaker to stereo, electrical signals feed through the speaker cables (red) into the coil. This turns the coil into a temporary magnet or electromagnet. As the electricity flows back and forth in the cables, the electromagnet either attracts or repels the permanent magnet. This moves the coil back and forward, pulling and pushing the loudspeaker cone. In brief, inside a speaker, an electromagnet is placed in front of a permanent magnet. The permanent magnet is fixed firmly into position whereas the electromagnet is mobile. As pulses of electricity pass through the coil of the electromagnet, the direction of its magnetic field is rapidly changed. This means that it is in turn attracted to and repelled from the permanent magnet, vibrating back and forth. The electromagnet is attached to a cone made of a flexible material such as paper or plastic which amplifies these vibrations, pumping sound waves into the surrounding air and towards your ears.

We all got a chance to scan Argeneshiya presentation when she talked about the functioning of 'Scanner'. Scanner is a device that shines light at a drawing or a

photograph and can interpret the reflected light as that the image can be stored in a computer system. Scanners have a flat sheet of glass on which the hard copy is placed. Scanners operate by shining light at the object or document being digitized and directing the reflected light (usually through a series of mirrors and lenses) onto a photosensitive element. In most scanners, the sensing medium is an electronic, light-sensing integrated circuit known as a charged coupled device (CCD). Light-sensitive photosites arrayed along the CCD convert levels of brightness into electronic signals that are then processed into a digital image.

After lunch, Vishal continued the presentation session. His topic was 'ECG'. The ECG device detects and amplifies the tiny electrical changes on the skin that are caused when the heart muscle depolarizes during each heartbeat. The ECG works mostly by detecting and amplifying the tiny electrical changes on the skin that are caused when the heart muscle "depolarises" during each heart beat. At rest, each heart muscle cell has a charge across its outer wall, or cell membrane. Reducing this charge towards zero is called de-polarization, which activates the mechanisms in the cell that cause it to contract. During each heartbeat a healthy heart will have an orderly progression of a wave of depolarisation that is triggered by the cells in the sinoatrial node, spreads out through the atrium, passes through "intrinsic conduction pathways" and then spreads all over the ventricles. This is detected as tiny rises and falls in the voltage between two electrodes placed either side of the heart which is displayed as a wavy line either on a screen or on paper. This display indicates the overall rhythm of the heart and weaknesses in different parts of the heart muscle.

Malavika gave a clear idea on 'Printers' next. In Laser Printers, ink is emitted from nozzles while they pass over media. The operation of an inkjet printer is easy to visualize: liquid ink in various colors being squirted onto paper and other media, like plastic film and canvas, to build an image. A print head scans the page in horizontal stripes, using the printer's motor assembly to move it from left to right and back again, while the paper is rolled up in vertical steps, again by the printer. A strip (or row) of the image is printed, then the paper moves on, ready for the next strip. To speed things up, the print head doesn't print just a single row of pixels in each pass, but a vertical row of pixels at a time. Laser printer works by using a laser to draw the required outputs onto a drum. This puts a positive electric charge on those parts of the drum which have been hit by the laser. An ink powder called toner is then sprayed on to the drum and it sticks where there is an electric charge. This drum is then pressed against a piece of paper and the ink is transferred to the paper. The paper is then heated by a fuser so that the toner binds to the paper, producing a printed copy.

Leena presented on 'Magnetic Train'. Magnetic Trains are otherwise called as Maglev train. The magnetized coil running along the track, called a guide way, repels the large magnets on the train's undercarriage, allowing the train to levitate between 0.39 and

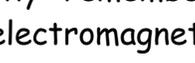
3.93 inches above the guide way. Once the train is levitated, power is supplied to the coils within the guide way walls to create a unique system of magnetic fields that pull and push the train along the guide way. The electric current supplied to the coils in the guide way walls is constantly alternating to change the polarity of the magnetized coils. This change in polarity causes the magnetic field in front of the train to pull the vehicle forward, while the magnetic field behind the train adds more forward thrust. Maglev trains float on a cushion of air, eliminating friction. This lack of friction and the trains' aerodynamic designs allow these trains to reach unprecedented ground transportation speeds of more than 310 mph.

We did find fire in Vijayaraj's presentation on 'Fire Alarm'. The primary purpose of a fire indicator panel is to monitor each circuit, zone or point for any condition (alarm signal or other abnormal condition); display the status of that condition and to operate any required output or outputs according to the approved design of the system. These outputs are typically for the purpose of warning occupants on a fire alarm signal, notify the fire brigade, control the spread of heat, smoke or fire; or used for a wide variety of other purposes. Audible textual appliances use High reliability speakers are used to notify the occupants of the need for action in connection with a fire or other emergency. These speakers are employed in large facilities where general undirected evacuation is considered impracticable or undesirable. The signals from the speakers are used to direct the occupant's response. The system may be controlled from one or more locations within the building known as Fire Wardens Stations, or from a single location designated as the building Fire Command Center. Speakers are automatically actuated by the fire alarm system in a fire event, and following a pre-alert tone, selected groups of speakers may transmit one or more prerecorded messages directing the occupants to safety. These messages may be repeated in one or more languages. Trained personnel activating and speaking into a dedicated microphone can suppress the replay of automated messages in order to initiate or relay real time voice instructions.

Abina made the concept of 'EB Transformer' clear. It is a electrical device that increases or decreases voltage. This consists of a laminated core, primary coil and secondary coil. This transformer works under three principle electromagnetic induction. The number of coils in the primary winding is more in a step-down transformer whereas the step-up transformer has more number of coils in the secondary winding. The input power always equals to the output power. Power is the product of voltage and current.

Raksha explained the working principle of 'Pendrive'. It is a type of Universal Serial Cable, flash drive. It is a kind of memory card that can be plugged into a computer's USB port. When a pen drive is connected to a USB port, it is activated. The USB port gives the pen drive access to the information on a specific computer drive. The data that is to be transferred is connected through a computer program. It is then read,

transmitted or rewritten from a pen drive to a computer or vice versa. Thus the required data gets copied to any selected drive on the computer for further use.

Indhuja gave details about the working of 'Tape Recorder'. The basic idea involves an electromagnet that applies a magnetic flux to the oxide on the tape. The oxide permanently "remembers" the flux it sees. A tape recorder's record head is a very small, circular electromagnet with a small gap in it, like this:  This electromagnet is tiny -- perhaps the size of a flattened pea. The electromagnet consists of an iron core wrapped with wire, as shown in the figure. During recording, the audio signal is sent through the coil of wire to create a magnetic field in the core. At the gap, magnetic flux forms a fringe pattern to bridge the gap (shown in red), and this flux is what magnetizes the oxide on the tape. During playback, the motion of the tape pulls a varying magnetic field across the gap. This creates a varying magnetic field in the core and therefore a signal in the coil. This signal is amplified to drive the speakers. In a normal cassette player, there are actually two of these small electromagnets that together are about as wide as one half of the tape's width. The two heads record the two channels of a stereo program. When you turn the tape over, you align the other half of the tape with the two electromagnets. There are the two sprockets that engage the spools inside the cassette. These sprockets spin one of the spools to take up the tape during recording, playback, fast forward and reverse. Below the two sprockets are two heads. The head on the left is a bulk erase head to wipe the tape clean of signals before recording. The head in the center is the record and playback head containing the two tiny electromagnets. On the right are the capstan and the pinch roller, the capstan revolves at a very precise rate to pull the tape across the head at exactly the right speed.

Padheep Narayanan gave a mesmerizing presentation on 'Robots'. A robot is made up of five main components. A typical robot has a movable physical structure, a motor of some sort, a sensor system, a power supply and a computer brain that controls all of these elements. Essentially, robots are man-made versions of animal life; they are machines that replicate human and animal behavior. The vast majority of robots do have several qualities in common. First of all, almost all robots have a movable body. Some only have motorized wheels, and others have dozens of movable segments, typically made of metal or plastic. Like the bones in your body, the individual segments are connected together with joints. Robots spin wheels and pivot jointed segments with some sort of actuator. Some robots use electric motors and solenoids as actuators; some use a hydraulic system; and some use a pneumatic system (a system driven by compressed gases). Robots may use all these actuator types. A robot needs a power source to drive these actuators. Most robots either have a battery or they plug into the wall. Hydraulic robots also need a pump to pressurize the hydraulic fluid, and pneumatic robots need an air compressor or compressed air tanks. The actuators are all wired to an electrical circuit. The circuit powers electrical motors and solenoids directly, and it activates the

hydraulic system by manipulating electrical valves. The valves determine the pressurized fluid's path through the machine. To move a hydraulic leg, for example, the robot's controller would open the valve leading from the fluid pump to a piston cylinder attached to that leg. The pressurized fluid would extend the piston, swiveling the leg forward. Typically, in order to move their segments in two directions, robots use pistons that can push both ways. The robot's computer controls everything attached to the circuit. To move the robot, the computer switches on all the necessary motors and valves. Most robots are reprogrammable -- to change the robot's behavior, you simply write a new program to its computer.

Nivedthj Shankar elucidated about the functioning of 'Network Switch'. Networks exist to move data between computers. To perform that task, the network software organizes the data being moved into Ethernet frames. Frames travel over Ethernet networks, and the data field of a frame is used to carry data between computers. Frames are nothing more than arbitrary sequences of information whose format is defined in a standard. The format for an Ethernet frame includes a destination address at the beginning, containing the address of the device to which the frame is being sent. Next comes a source address, containing the address of the device sending the frame. The addresses are followed by various other fields, including the data field that carries the data being sent between computers. Frames are defined at Layer 2, or the Data Link Layer, of the Open Systems Interconnection (OSI) seven-layer network model. The seven-layer model was developed to organize the kinds of information sent between computers. It is used to define how that information will be sent and to structure the development of standards for transferring information. Since Ethernet switches operate on local area network frames at the Data Link Layer, you will sometimes hear them called link layer devices, as well as Layer 2 devices or Layer 2 switches.

Raghul presented on his topic 'Radio'. Transmitter or radio station is where the RF signal originates. Here audio is first encoded using modulation. Here the IF is converted to RF. During receiver operation the process can be done. The RF is converted to lower IF. Finally it is amplified. Next is the wireless data operation. The source is a computer instead of audio. The destination is also a computer or computer network instead of a speaker. The signal is encoded and decoded using more exotic digital modulation formats. The radio frequency bands that are used are different as determined by the FCC. And the maximum allowable transmission power is also restricted. Otherwise, it is all pretty much the same.

Nishan then presented on 'Multimeter'. A multimeter is a combination of a multirange DC voltmeter, multirange AC voltmeter, multirange ammeter, and multirange ohmmeter. An un-amplified analog multimeter combines a meter movement, range resistors and switches. The key process that occurs within a digital multimeter for any measurement that takes place is that of voltage measurement. All other measurements are derived

from this basic measurement. Accordingly the key to understanding how a digital multimeter works is in understanding this process. There are many forms of analogue to digital converter, ADC. However the one that is most widely used in digital multimeters, DMMs is known as the successive approximation register or SAR. Some SAR ADCs may only have resolution levels of 12 bits, but those used in test equipment including DMMs generally have 16 bits or possibly more dependent upon the application. Typically for DMMs resolution levels of 16 bits are generally used, with speeds of 100k samples per second. These levels of speed are more than adequate for most DMM applications, where high levels of speed are not normally required.

Vinoj did his presentation on hid topic 'Wet Grinder'. A grinder is a machine used to grind flour. The stone used in wet grinders are made of marble. The wet grinder was invented by Mr.Sabapathy in the year of 1955. First the power is supplied to the moor thus it runs. The motor is connected to the fan and as the motor rotates the belt too rotates. As the belt rotates the stone rotates and grinds the flour.

Akshaya said the working of, 'Digital Wristwatch'. Digital watches are a popular and important piece of technology that allows you to keep a portable measurer of time around with you. If you wear a digital watch, then you already know how useful it can be. Even better than traditional watches, this display numbers in an easy-to-read manner that even show in the dark. To begin to understand how these watches work, we have to start at the source of their power: the battery. Watch batteries are small, round and offer the power needed to work the watch. They are directly connected to a crystal oscillator. A crystal oscillator is made out of quartz crystal and uses power from the watch's battery in order to create a 60-hertz signal. Each hertz represents one oscillation per minute, which is a necessary number in order for the watch to accurately display the time. The crystal oscillator sends this signal, which is known as the time base, through a counter next. This is a preprogrammed device that begins to break up the time base by dividing it by certain numbers. First, it is divided by 10, and then again by 6. This sets up the clock to start counting seconds, which will allow it to accurately display what time it is. When the counter is done, a binary number is achieved. This binary number is then sent to a special microchip known as a "binary number to 7-segment display converter." Though it doesn't have a fancy name, it does have one that tells you just what it is going to do. It is programmed to convert the binary number into a series of seven numbers. These all correspond to the hours, minutes and seconds of the current time. This time is then displayed on the face of the watch through LED lights that are controlled to display the numbers the chip comes up with. This is how a watch is able to display the accurate time.

Ashmi said about 'Offset Printer'. Before any project can go on press, digital files must be imaged onto printing plates. Information from digital files is transferred to printing plates in much the same way as digital photographs are imaged. A measured amount of

light, is used to expose the printing plate in a plate-making system. When exposed to light, a chemical reaction occurs that activates an ink-receptive coating on the printing plate. This results in the transfer of the digital image onto the plate. Conquest Graphics uses the sheet-fed method of offset printing. Pre-cut paper is fed through the press as a stack or pile of press sheets. Sheet-fed offset presses print at very high speeds and use very large sheets of paper. As a sheet of paper is fed into the printing press, it will move through a series of rollers and blankets where the ink is transferred onto the paper. The ink is transferred to the printing plates through a series of rollers. On the press, the printing plates are dampened, first by the water rollers, then by the ink rollers. These rollers move the ink from the ink fountain onto the printing plates. The image area of the printing plate accepts ink from the ink rollers. The water rollers help to keep ink off of the non-image areas of the printing plate. Each printing plate then transfers the image to a rubber blanket that in turn transfers the image to the paper. The plate itself never actually touches the paper. This is what is meant by offset printing. The bindery is where the printing manufacturing process is completed. Press sheets have been run through the press, allowed to dry, and transported to the bindery for finishing.

Seanna explained about the working of 'Air Conditioner'. The working fluid arrives at the compressor as a cool, low-pressure gas. The compressor squeezes the fluid. This packs the molecule of the fluid closer together. The closer the molecules are together, the higher its energy and its temperature. The working fluid leaves the compressor as a hot, high pressure gas and flows into the condenser. The fins help the heat go away, or dissipate, more quickly. When the working fluid leaves the condenser, its temperature is much cooler and it has changed from a gas to a liquid under high pressure. The liquid goes into the evaporator through a very tiny, narrow hole. On the other side, the liquid's pressure drops. When it does it begins to evaporate into a gas. As the liquid changes to gas and evaporates, it extracts heat from the air around it. The heat in the air is needed to separate the molecules of the fluid from a liquid to a gas. The evaporator also has metal fins to help in exchange the thermal energy with the surrounding air. By the time the working fluid leaves the evaporator, it is a cool, low pressure gas. It then returns to the compressor to begin its trip all over again. Connected to the evaporator is a fan that circulates the air inside the house to blow across the evaporator fins. Hot air is lighter than cold air, so the hot air in the room rises to the top of a room. There is a vent there where air is sucked into the air conditioner and goes down ducts. The hot air is used to cool the gas in the evaporator. As the heat is removed from the air, the air is cooled. It is then blown into the house through other ducts usually at the floor level. This continues over and over and over until the room reaches the temperature you want the room cooled to. The thermostat senses that the temperature has reached the right setting and turns off the air conditioner. As the room warms up, the thermostat turns the air conditioner back on until the room reaches the temperature.

Rudra really excelled well in her presentation on the functioning of 'Television'. A television produces a series of tiny dots on a screen that, when seen as a whole, appear as an image. Older televisions rely on a cathode-ray tube to produce images, and operate with an analog signal. As technology has advanced and broadcast signals transitioned from analog to digital, plasma and LCD (liquid crystal display) televisions were created. These TVs are more compact and have crisper pictures than their cathode-ray counterparts because they use a thin grid of pixels to create images rather than a vacuum tube. Most kinds of television work from the same basic principle. The tiny dots of light produced on the TV screen, called pixels, flash according to a specific pattern provided by the video signal. A person's eyes transmit this pattern to the brain, where it is interpreted as a recognizable image. The television set refreshes these patterns hundreds of times per second — faster than the human eye can see — which gives the illusion of movement.

Algin Bala was called out next to present on 'Train'. Coal is loaded into the firebox. The fire heats up the boiler. The boiler is a big tank of water with dozens of thin metal tubes running through it. The tubes run from the firebox to the chimney, carrying the heat and the smoke of the fire with them. This arrangement of boiler tubes means the engine's fire can heat the water in the boiler tank much faster, so it produces steam more quickly and efficiently. The steam generated in the boiler flows down into a cylinder just ahead of the wheels, pushing a tight-fitting plunger, the piston back and forth. The inlet valve lets the steam in. The piston is connected to the locomotive's wheels through a crank and connecting rod. As the piston pushes, the crank and connecting rod turn the locomotive's wheels and power the train along. When the piston has reached the end of the cylinder, it can push no further. The train's momentum carries the crank onwards, pushing the piston back into the cylinder the way it came. The steam inlet valve closes. An outlet valve opens and the piston pushes the steam back through the cylinder and out up the locomotive's chimney.

Shyam Sagar brighten our minds when she talked about 'Tube light'. Tube light has a circuit's one with choke (Inductor) and other with starter. Now, starter is a bimetallic strip when current first passes it will first pass through a circuit with filaments & heat the filaments just to start ionization of gas in the tube. (filaments are at opposite ends of mercury neon plasma glass tube) simple. Now the starter (in the circuit of filaments) having basically. Bimetallic strip will heat up and current passes across this newly created joint to heat the filaments. The circuit is designed such that after some time starter will cut off and current. current suddenly becomes zero now here get some concept of an inductor .inductor or ballast has a property that if current becomes zero i.e. changes to zero i.e. increase or decrease then this change will cause a high voltage to develop by Lenz law/or law of electromagnetic induction(please study inductor, Lenz laws, self-induction and all these sort of those things. we need this heavy voltage of

20000v so that the gas molecules in tube light & across filaments ionize & break and current will now flow through this alternate circuit(having choke) is able to flow through them emitting photons of light or plasma configuration etc here this heavy voltage came from the choke. a choke is a self inductor please refer. Now starter may cause strips to join and then cool again, that is cut off again and again to cause ballasts of high voltage to break across gas molecules and emit plasma light. Then what a capacitor is doing here well it is there to improve power factor. Once tube light starts no role of starter circuit the path has been established

The final presentation was of Naveenjith on 'Bicycle'.

Bicycle Tyre: Friction is also working to your advantage between the rubber tires and the road you ride on: it gives you grip that makes your bike easier to control, especially on wet days.

Bicycle Frame: The frame doesn't simply support you: its triangular shape (often two triangles joined together to make a diamond) is carefully designed to distribute your weight. Although the saddle is positioned much nearer to the back wheel, you lean forward to hold the handlebars. The angled bars in the frame are designed to share your weight more or less evenly between the front and back wheels.

Bicycle Gear: A typical bicycle has anything from three to thirty different gears—wheels with teeth, linked by the chain, which make the machine faster or easier to pedal.

Bicycle Wheel: The wheels ultimately support your entire weight. So if you weigh 60 kg (130 lb), there's about 30 kg (130 lb) pushing down on each wheel (not including the bicycle's own weight). The spokes are what stops the wheels from buckling.

Bicycle Brake: Brakes on a bicycle work using friction (the rubbing force between two things that slide past one another while they're touching). When you press the brake levers, a pair of rubber shoes clamps onto the metal inner surface of the front and back wheels.

Feedback Session

The college student who helped us throughout the program gave the feedback at first and they were really surprised to see such great presentations in the school age itself. Next a student from each group gave a brief feedback which was followed by the comments of the people who corrected our mistakes during the presentation. Mr.Bergin said that the number of word in the PowerPoint slides should be in minimum; only the key words should be included. As we are regarded as young scientists we should a think scientifically and innovate solutions for the problems faced. Miss.Lekshmi said that we did the best according to our level. We should minimize the number of words in PowerPoint. We should have a basic understanding on our topic, only then we can answer

all the questions asked. Mr.Mullanchery M.Velaian gave the final talk. The meeting came to an end at 5:00 p.m with National Anthem.

15/02/2015

A special chance was given to the students who were on leave on Saturday. The continuation of the Technical Presentation was held on the same venue but on 15/02/2015. The meeting began at around 2:15 p.m with the presence of the young scientists and the dignitaries. The dignitaries present were:

- Mr.Mullanchery M.Velaian
- Capt.Bennet Singh
- Shri.L.Edwin Sam
- Shri. M.C.Shibin Tad

First Mr.Mullanchery M.Velaian, the brain of KAP, addressed us. He said that the way of presenting differs from one person to another. When we research we should gather the appropriate information. Whatever works given should be done only by us because 'jd; ifNa jdf;Fjtp'. One can benefit only from his or own work and only if we do so, we can improve. The technical presentation is held to mould our presentation skills.

Presentation Session

Jereshea presented on 'Refrigerator'. HFC is the gas used instead of CFC. A motor and compressor squeezes the HFC. When it is compressed, a gas heats up as it is pressurized. When you pass the compressed gas through the coils on the back or bottom of a modern refrigerator, the warmer gas can lose its heat to the air in the room. When you have two things that are different temperatures that touch or are near each other, the hotter surface cools and the colder surface warms up. This is a law of physics called the Second Law of Thermodynamics. As it cools, the HFC can change into a liquid because it is under a high pressure. The liquid flows through what's called an expansion valve, a tiny small hole that the liquid has to squeeze through. Between the valve and the compressor, there is a low-pressure area because the compressor is pulling the ammonia gas out of that side. When the liquid HFC hits a low pressure area it boils and changes into a gas. This is called vaporizing. The coils then go through the freezer and regular part of the refrigerator where the colder liquid in the coil pulls the heat out of the compartments. This makes the inside of the freezer and entire refrigerator cold. The compressor sucks up the cold gas, and the gas goes back through the same process over and over.

Abhirami stopped our mind from thinking away from her words when she presented on 'Stopwatch'. Stopwatches are watches that time events. Instead of telling one the time of day, the stopwatch tells the person how long it took to perform a certain function.

Some stopwatches can time multiple events. Some stopwatches can time parts of the event along with the total time of the event. The stopwatch contains buttons to perform certain functions, such as starting, stopping and split timing. Your stopwatch could have other functions such as an alarm or calendar function. Refer to your owner's manual for a list of all functions of your stopwatch. The stopwatch works by pressing the start button when the event begins. For example, if you were timing a race, you would press the start button when the race starts. When the race is over, press the stop button. The time of the race displays on the stopwatch just as the time of day would display on your wristwatch. Clear the watch when you are done so that it is ready for the next event you want to time. Most stopwatches do not attach to a person's wrist--the person wears it around his neck or carries it in his pocket. Stopwatches have a timer built into them.

Ayana was called next to present on 'Rocket'. Rockets work under Newton's third law of motion- Every object has an equal and opposite reaction. Rockets work by accelerating gas to very high speeds inside and then letting the gas escape from the back of the rocket. Liquid hydrogen (the fuel) from one tank is mixed with liquid oxygen (the oxidizer) from a separate tank using pumps and valves to control the flow. The oxidizer and fuel mix and burn in the combustion chamber, making a hot blast of exhaust gas that propels the rocket. The payload (the cargo--such as a satellite) occupies a relatively small proportion of the rocket's total volume in the nose-cone at the top.

Mereshea presented on 'Computer'. To accomplish a task using a computer, you need a combination of hardware, software, and input. Computer consists of devices, like the computer itself, the monitor, keyboard, printer, mouse and speakers. Inside your computer there are more bits of hardware, including the motherboard, where you would find the main processing chips that make up the central processing unit (CPU). The hardware processes the commands it receives from the software, and performs tasks or calculations. First, you provide input when you turn on the computer. Then the system software tells the CPU to start up certain programs and to turn on some hardware devices so that they are ready for more input from you. This whole process is called booting up. The next step happens when you choose a program you want to use. You click on the icon or enter a command to start the program.

Soorya Vijay gave a clear idea about the working of 'CCTV'. Closed -circuit television is the use of video camera to transmit a signal to a specific limited set of monitors. There are many different types of CCTV systems available--analog and digital, wired and wireless--and their modes of operation vary; however, the basic components are in essence the same: a CCTV camera, a CCTV camera lens, a CCTV monitor, and (for wired systems) cables that carry the signal from one place to another. The images collected are sent to a CCTV monitor and recorded on video tape via a VCR or as digital information via a DVR (Digital Video Recorder). The CCTV camera lens will determine

how far and much detail the CCTV camera can see. The CCTV camera picks up the signal from the area being monitored, and in a wired system, the CCTV camera sends the signals through a coaxial cable to the CCTV monitor; in wireless systems, no cable is needed, instead the CCTV camera broadcasts the signal. Monitors can be watched by CCTV controllers or left unmonitored. Recent advances in technology and software mean many DVRs are now equipped with advanced features such as Motion Recording and Event Notification. When set to motion record devices will only record when the CCTV camera detects motion. This saves storage space because the device is not recording during periods of inactivity. Event Notification is the process of sending a text message, recorded telephone messages or email when motion is detected.

Ageesha said about the working principle of 'X-Ray'. X-rays are highly penetrating, ionizing radiation; therefore X-ray machines are used to take pictures of dense tissues such as bones and teeth. This is because bones absorb the radiation more than the less dense soft tissue. X-rays from a source pass through the body and onto a photographic cassette. X-rays are electromagnetic waves like radio and light waves. These all travel at the speed of light, which is 300 000km per second. X-rays can be generated by an X-ray tube, a vacuum tube that uses a high voltage to accelerate the electrons released by a hot cathode to a high velocity. The high velocity electrons collide with a metal target, the anode, creating the X-rays. In medical X-ray tubes the target is usually tungsten or a more crack-resistant alloy of rhenium and tungsten but sometimes molybdenum for more specialized applications, such as when softer X-rays are needed as in mammography. In crystallography, a copper target is most common, with cobalt often being used when fluorescence from iron content in the sample might otherwise present a problem

Prabin Kumar said about 'LED TV'. An LED screen is actually an LCD screen, but instead of having a normal CCFL backlight, it uses light-emitting diodes (LEDs) as a source of light behind the screen. An LED is more energy efficient and a lot smaller than a CCFL, enabling a thinner television screen. Marketing made a lot of fuss about LED TVs, but it is only the backlight that changed, so there is actually no picture quality improvement over a normal LCD screen. There have been prototypes of real LED TVs. They didn't have an LCD panel but instead had 3 small colored LEDs per pixel. These would have been a lot better, but unfortunately the manufacturing cost was way too high to be profitable. OLED TVs are very similar to this and will hopefully become affordable within a few years. There are three main configurations of LED as backlights for television screens: full array, edge lit, and direct lit.

Kalidas told the working of 'ELCB'. The heart of an ELCB is a magnetic core around which are wound two coils in magnetic opposition to one another. The phase conductor feeds through one core and the neutral conductor feeds (as a return path) through the other. On normal loading the phase and neutral currents should be the same producing equal

and opposite magnetic fluxes in the ELCB magnetic core. These fluxes cancel out. A search coil is also wound on this magnetic core and in normal operation the flux balance induces no current in this coil. Under fault conditions or when under test, the phase current is invariably larger than the neutral thus producing an imbalance in the core fluxes. This imbalance produces a resultant flux in the core which cuts the search coil producing a current. This search coil current actuates the breaker by open circuiting the control contacts taking the phase current off the fault or test circuit.

Rishvi gave a clear picture about 'Land phone'. To make a landline phone work, two copper wires must transmit two things: signals and voice. The two wires, usually coated green and red, are the heart of the process that makes the phone work. While the telephone rests on the hook or in its cradle, a capacitor inside the phone cradle limits the amount of electrical current flowing to the ringer, actually a chip within a small speaker. The capacitor prevents a short circuit in the wires and the local telephone exchange equipment recognizes that the phone is hung up. For proper phone operation, sound must be conveyed along the same wires that activate the ringer. The handset of all telephones contains a microphone that allows sound pulses to be transferred into electrical pulses. The other integral part of the handset, the receiver, converts the audibly modulated electrical current back into sound waves and the voice is heard. Transmission and reception of the voice, therefore, depends on both sound waves and electrical pulsation.

Jefin presented on 'Fan'. An electric fan works with the help of an electric motor. The electric motor consists of a coil of wire wound around a metallic core. As electric current passes through the coil of wires, it produces rotational motion in the hub. This rotates the blades attached to the hub. A hub at the center of the fan is connected to metallic blades. The electric motor drives the fan blades, and this circulates the air downward from the ceiling. The blades are shaped at an angle. As the fan rotates a partial vacuum is created and the particles tend to move from the area of the low pressure to the area high pressure as the Bernoulli's principle states. This way the fan functions.

Shalomi explained on 'Solar water heater'. Solar water heating systems include storage tanks and solar collectors. There are two types of solar water heating systems: active, which have circulating pumps and controls, and passive, which don't. Most solar water heaters require a well-insulated storage tank. Solar storage tanks have an additional outlet and inlet connected to and from the collector. In two-tank systems, the solar water heater preheats water before it enters the conventional water heater. In one-tank systems, the back-up heater is combined with the solar storage in one tank. A solar water heater is a combination of three elements: A solar collector which is an energy device that is designed to absorb solar radiation and transfer the energy to the energy transfer fluid or material passing through the collector, the energy transfer medium

that transfers the absorbed heat to the water, through conduction or convection and the thermally insulated hot water storage vessel with a protected inner lining.

Sabrina said on 'DVD player'. A DVD has many pits which are being hit by laser. This laser will be reflected differently according to the change of pits and bumps. Though the laser hits a single spot, the DVD moves in a circular motion so that the entire area is covered. Mirrors are also used to change the spot. These reflected laser beams are then collected by a light sensor which converts the different signals into a binary code. In short, the optical system helps in converting the data from the DVD into a digital code. The binary signal is then sent to a Digital to Analog converter which will be setup in the PCB. Thus the corresponding analog signal of the DVD is obtained. The PCB also has amplifiers which amplify the signal and then sends it to the graphic and audio systems of the computer/TV. Thus, the corresponding audio/video signal is obtained.

Mejallin Arno said the functioning of 'Electric Water Pump'. The impeller spins very fast. The curved blades channel water into the eye, or center of the impeller, but that water flows along to the outside of the blades because the impeller moves fast, the centrifugal force compresses the water against the outside of the blade. This pressure causes the water to rocket forward in a high-speed jet out of the impeller. This speed creates pressure on the outlet side of the pump, pushing the water through the pipe. Smaller electric water pumps usually have small DC motors. The DC motor is contained in a sealed case attached to the impeller and powers it through a simple gear drive. In the center of the motor is a rotor with coils around it. Around those coils are magnets, which create a permanent magnetic field that flows through the rotor. When the motor turns on, electricity runs through the coils, producing a magnetic field that repels the magnets around the rotor, causing the rotor to spin around 180 degrees. When the rotor spins, the electricity in the coils flips, pushing the rotor again and causing it to spin. Through a series of pushes, the rotor continues to spin, driving the impeller and powering the pump.

Meera explained the functioning of 'Motor Cycle'. Motor cycle engine consist of pistons, a cylinder block and a head, which contains the valve train. The pistons move up and down in the cylinder block, driven by explosions of a fuel-air mixture that has been ignited by a spark. Valves open and close to allow the fuel-air mixture to enter the combustion chamber. As the pistons move up and down, they turn a crankshaft, which transforms the energy from the pistons into rotary motion. The rotational force of the crankshaft is transmitted, via the transmission, to the rear wheel of the motorcycle. Motorcycle engines are generally classified by one of three characteristics: the number of cylinders they possess, the capacity of their combustion chambers or the number of strokes in their power cycles.

Feedback Session

As soon as the presentation session came to an end, the feedback session began. Capt.Bennet Singh and Shri.L.Edwin Sam gave the suggestions. They said that the presentations were not up to the mark but okay. We should analyze the topics completely for a successful presentation. Mr.Mullanchery M.Velaian gave away the vote of thanks and with that the meeting was finished.

The technical presentation enabled me to know the functioning of the simple gadgets around us. The opportunities given by KAP has made my stage fear vanish and germinated the plant of self-confidence within me. My presentation skills are also being molded just as the stones are molded into a beautiful sculpture. All these are only because of KAP. I extend my hearty thanks to KAP and Maria College of Engineering and Technology for such a great opportunity to benefit us a lot.

**R.J.RESHMA,
MAROON TEAM LEADER.**

We were eagerly waiting for a chance to do a PowerPoint presentation. Fortunately, we were given an opportunity to express our talents by doing a PowerPoint presentation. We were given an opportunity to explain the technical working on latest science innovations. There are a number of electronic devices and gadgets around us. But knowing is technical working and the principle behind its' working is very important. KAP has given us this chance. The technical presentation on science and technological innovations was conducted at Maria College of Engineering and Technology, Attoor. The programme began at 9:00 am. First Mr.Mullanchery M.Velaian, the organizer of KAP gave us some ideas about the Power Points which we are going to present in National Science Day on February 28. He told us the method of preparation and also the venue-Sigma College of Architecture, Moododu. The topics given for National Science Day are very different from that of the topics of technical presentation. India's development is science is the major concept of National Science Day. We should think every topic in a different manner. The topics of National Science Day include fields like space, agriculture, Indian navy, air force, defense and others. We can get guidance from different personalities who are well versed in the related fields, he said. We shouldn't depend upon other agency and every works allotted to us should be done by us. S.Abina, the leader of red team compeered the session. She invited the dignitaries to the Dias. They include Dr.Sujar, Principal of Maria College of Engineering and Technology, Mr.Perumal, ISRO manager, Mr.Velaian, the organizer of KAP, Shri.Shibin Tad, Shri.L.Edwin Sam and Shri.P.Gopalan. The programme began with Tamil Thai Vazhthu. The next session was the lighting of kuthu vizhakku. All the dignitaries lighted the kuthu vizhakku according to the Tamil tradition. S.Abina gave a short introduction about Mari College of Engineering and Technology, Attoor. She then invited Mr.Velaian for a short introductory talk. He wished us a fine good morning. He thanked Mari College for giving us this opportunity to conduct the technical presentation. Each and every KAP programmes will have some goals

in it. The technical presentation enables the students to present their PowerPoint without fear. It will increase the seminar, interactive and answering skills. He thanked the college Principal Dr.Sujar and told us to send a thanks letter to the college to show our deep sense of gratitude. He welcomed all the dignitaries present in the Dias. Mr.Berjin, physics teacher was also present there. His thinking is scientific, said Mr.Velaian. He then welcomed Mr. Thiruvengadam. Finally, he welcomed all the guides and students. He wished a good luck to present our PPTs without fear. He said that the KAP book processing is going on. He gave us confidence and told us not to worry if we do mistakes. Then, he ended his talk. S.Abina thanked him and welcomed Dr.Sujar, Principal of Maria College of Engineering and Technology to give a short talk. He expressed his heart filled morning greetings to us. As Mr.Velaian said, each and KAP programmes give us different experience and we have visited many colleges and had now visited the Maria College also. He welcomed all of us on behalf of the college. The college began in 2004 with four subjects. Now the education system has developed very well. He said that international conference will be held in the college. We eight grade students are very blessed, because we had got many rare opportunities. Presentation skill is very important, he said. It increases our scientific thinking. The world has become a small global village. We come to know about everything from our house through internet. We are given chances to have conversations with great scientist and other personalities in this young age. The sole reason is the development of science. He reminded us a famous quote

"Learning gives creativity

Creativity leads to thinking

Thinking provides knowledge

Knowledge makes you great" -A.P.J.Abdul Kalam

By seeing the objects around us, different people come to our minds. By seeing aeroplane, we remember Wright brothers. By seeing electric bulb, we remember Thomas Alva Edison. He gave us few tips to succeed in our life. First, we should set a goal in our life. Then we should search for knowledge and try to learn more things. The third position is for hard work. Nothing can be achieved in our life without hard work. The last won is the confidence which make us not be worried if we get failed. 'Try and try until you succeed'. By saying this he ended his talk. He was thanked and Mr.Perumal was welcomed by S.Abina. He began his talk by saying the development of India in science. He glorified KAP by saying that it creates platforms for students to express their talents. It trains the students about how to do presentations and how to search information. Designing and testing is very important I scientific things. He ended his talk by wishing us a good luck. The next talk was given by Mr.Berjin. He told us about two kinds of presentation. The first kind of presentation is that CUT-COPY-PASTE-

PRESENT. The second type is that OBJECTIVE-THINK-ANALYZE-STUDY-PRESENT. The first type he mentioned means cutting the data and information from somewhere, then copying it and pasting it. Finally, the presentation will be full of text and we will not understand the concept. The second type of presentation means taking an objective first, then thinking about the topic and raising questions, then analyzing it and finally it will be studied and presented in a successful manner. He instructed us to always prefer the second type of presentation. Our thinking should always be scientific. He expected our presentations to be done by following the second type of presentation. Presenting a wide topic within five minutes is a skill. It's a very rare opportunity given to us, he told. He advised us to accept the mistakes done by us and only then we will be able to correct ourselves. The person who always tells good remarks about us will make us feel happy but we will not get any benefits. But the person who encourages us and corrects our mistakes is one who is the real guide. The negative remarks will mould us. It creates a mentality to modify it. Positive remarks and feedbacks give us energy whereas negative feedbacks will change us in a better manner. He wished everyone best wishes. S.Abina thanked him and welcomed Shri.P.Gopalan to give a short talk. The education of young age is precious. The scientific thinking makes us a good scientist, he said. Old generations will feel some difficulty in grasping the knowledge about equipments. But now, a 3 or 4 old kid knows to operate various electronic gadgets. KAP programmes increase our scientific thinking. Doing Power Points will give us new experience. The feedbacks given will help us to correct ourselves. He told about a seventh grade boy who invented automatic functioning railway system. He was selected for a science fair and received awards from Dr.A.P.J.Abul Kalam. We all are blessed students and he finally wished us a good luck. The next talk was given by Shri.L.Edwin Sam. Our knowledge can be improved by using our questioning skills, he said. KAP gives us observing skill, information gathering skill, experimenting skill, analyzing skill, report writing skill, communication skill, attitude development skills and several others. There are many gadgets around us. But we are not aware about its technical functioning. Even some great personalities may not know about its functioning. When all the students present our PPTs based on the technical working of various gadgets, we will come to know about a device's parts, functions, working principle and its uses. We told us to accept our mistakes and correct it. He then ended his talk. S.Abina gave the vote of thanks. She thanked all the dignitaries. She specially thanked Mr.Jeenu Prabhu, Mr.Viju and Mr.Vijaya Kumar for helping us by preparing the hall.

The time for expressing our talents came. We began our technical presentations by 10:05 am. Judges were seated in front to correct our mistakes and to give feedbacks and suggestions. The judges were Shri.L.Edwin Sam, Mr.Berjin, Mr.Perumal, Shri.Sahajan,

Shri. Thiruvengadam and Shri. Shibir Tad. First it was the chance of green team members to give their presentation. Gby Atee, the leader of green team came forward to give her presentation on the topic 'LINEAR POWER SUPPLY'. We humans need food to live. Similarly, power supply is needed for electrical gadgets and appliances. The linear power supply is used in many applications where noise is of great importance. For example, we can say audio amplifier. The components of linear power supply include the input transformer, rectifier, smoothing and linear regulator. The transformer has two coils and they are of two types, namely step-up transformer and step-down transformer. The rectifier converts AC (Alternate Current) to DC (Direct Current). The direct current is stabilized by the help of smoothing and the power is regulated by the linear regulator. Its disadvantages are:

- It's not efficient

- Its size and weight

- Heat dissipation

The feedbacks of her presentation were given. Mr. Berjin explained us the role of a transformer clearly. We cleared our doubts based on linear power supply. Next it was the turn of H. Sree Ram to give his presentation on his topic 'PETROL CAR'. Petrol car is used for transportation. A car is a wheeled, self powered motor vehicle. The inventor of automobile is Karl Friedrich Benz. Petrol engine is the internal combustion engine present in a car. First the petrol engine intakes oxygen from the atmosphere. Then the process of compression will take place followed by combustion. Finally, the process of exhaustion will take place. Petrol engines are mechanically designed. Then he explained about the speed and efficiency of a petrol engine. Its components are spark plug, valves, piston and piston rings, connecting rod and crankshaft and sump. Its advantage is that cost efficient. Its disadvantage is that it gives less mileage when compared to the diesel cars. Suggestions and few corrections on his presentation were given. In petrol cars, the gear system plays a major role, so it should be explained, said Shri. L. Edwin Sam. The objectives of the presentation should be told first, said Mr. Berjin. Then J. S. Jisfia Shifany, the co-leader of green team presented her PowerPoint on the topic 'MRI SCAN'. MRI scan is a radiology technique which provides the image of internal structures. It consists of a movable bed, circular magnet. Radio waves are produced in MRI scan. The inventor of MRI scan is Raymond Vahan Damadian. A magnetic field is produced by the circular magnet. The radio waves produced by the MRI scan vibrate the protons. This signal is sent to the computer and the images of the internal parts are formed. MRI scans are of various types:

- Head MRI scan

- Chest MRI scan

- Bone and joint MRI scan

Abdomen and pelvis MRI scan

Its main use is to detect the disease. The feedbacks were given with some additional information. The PowerPoint should contain more images than text, said the judges. One important point that we should know is that MRI scans do not have any bad effects on our body. 'NEON LAMP' was presented by B.Aswin Kumar. Neon lamp was found by William Ramsay and Morris in the year 1898. It's a simple lamp which uses gas for working. In 1900, Danniell found Moorge tube. He said us the history of the neon lamp. It is used in neon signs, indicators and machines, airport runways, testers etc. It can be changed into different colours as we desire. High voltage electricity is given to the lamp and this produces ionized gas. This ionized gas splits into neon ions, neon atoms and electrons. All these products fuse together and photos are emitted which gives us the light. Its advantages include longevity, power efficiency and clear visibility. Its disadvantages include cost, limitations and maintenance. Suggestions on his talk were given. Neon is an inert gas and first it stays neutral inside the tube. When electricity is passed through the tube, the neon gas splits and finally emits light through photons. Light is emitted when higher energy comes to lower energy. After his presentation we had a break at 10:45 am. Tea and snacks were provided by the college.

The presentations were continued at 11:00 am. It was the turn of N.Srinidhi to give her presentation on the topic 'TURBINE'. Turbine is used to generate electricity. There are two types of mechanical energy

- Potential energy : The fluid stand still
- Kinetic energy : The fluid moves

The inventors of turbine are Sir Charles Parsons and Gustaf de Laval. Turbines are of two types

- Impulse turbine : It deals with the velocity of the fluid
- Reaction turbine : It deals with the pressure of the fluid

She then explained us the working model of a turbine. In gas or aircraft turbine, the compressor is heated first. The air passes through the combustor and this force of the air makes the turbine to move. Steam turbine, water is boiled to produce steam. This steam rotates the armature and shaft which turns the turbine. Its major use is to generate electricity. Her presentation contained more images which made us to understand the concept clearly. The next presentation was given by A.Kaviya Shree. Her topic was 'ELECTRIC MEASUREMENT COUNTER'. The electric measurement counter is the counter which measures the cell by electrical power. The inventor is Johannes. There are many types of counter. Some of them are

Cell counter

Binary counter

Ring counter

Bcd counter

Up-down counter

Frequency counter

She then told its advantages and disadvantages. First the cell identification process is taken place in the counter. Then the aperture current is passed. The electrodes move and a vacuum is created. Thus, the cell is measured. Next J.K.Shruthi Krishna explained her PPT on the topic 'DIESEL CAR'. The inventor of diesel car is Rudolf Diesel. First step in its working is the compression. Due to compression, pressure and temperature increase. First the air is in taken, then compressed and finally exhausted. The electric motor present in the car makes the chain to rotate. This chain makes the gear to rotate. When one gear rotates, it makes all other gears attached with it to rotate. Thus the axles of the wheels are moved. Finally, the wheels of the car are moved. Its advantages include more power and efficient. Its disadvantages include causes pollution and expensive. Next S.Haritha gave her presentation on the topic 'ELECTRICAL WATER PUMPING'. The pump was found by the British. They called it as the 'Parish pump'. From the main water tank, one way valve will be present which allows the flow of water at one direction after its being pumped. The suction line sends the water to the compressor. This is sent to the condenser. Through the liquid line and expansion device, the water is sent to the evaporator. She listed its advantages and disadvantages. Its detailed working principle was given by the judges.

The next turn was that of maroon team's. First the leader of maroon team, R.J.Reshma gave her presentation on the topic 'INVERTER'. She first said the contents of the presentation which included introduction to inverter, its block diagram, electrical wave forms and the functions of parts of inverter. The term 'inverter' was coined by David Prince. Its main function is to convert DC (Direct Current) to AC (Alternate Current). The inverter is used for many practical purposes and in homes for the working of various electrical gadgets and appliances. Then the block diagram was explained. There were two conditions in which an inverter works:

When AC main supply is available

When AC main supply is not available

When AC main supply is available, the AC main sensor senses the signal and sends it to relay and to the battery charging section. The AC main sensor activates the relay which sends the signal directly to the output socket. The load will be driven by the voltage line this time. The voltage line is connected to the battery charging section which converts DC into AC and gives it to the battery for storage. If the AC main supply is not available,

the oscillator circuit produces 50Hz of MOS drive signal which is amplified by the driver section and send to the output amplifier. Next to the output amplifier, transistors or MOSFETS are present. They are used for switching operation and are connected the primary windings of the transformer. The 50Hz is converted into 220V AC or 110V AC according to the ration of the windings of coil in the transformer. Then the current supplied to the output socket with the help of relay. There are there major electrical wave forms:

Square wave

Modified sine wave

True sine wave

Different types of inverters give outputs with different wave forms. The presentation was ended by saying the uses of major components present in an inverter.

Oscillator: Used to make about 40Hz to 70Hz square wave.

Transistor: Used for switching operation.

Transformer: Used to increase or decrease voltage.

Relay: Small current can be used to switch on and off a circuit with a large current.

Battery: Stores the electric current.

Capacitor: Store the energy.

Good remarks were given. S.Dani Rovas, the co-leader of maroon team presented her PPT on the topic 'VACUUM CLEANER'. A vacuum cleaner is a device which uses an air pump to clean floors and other surfaces. Its inventor is Herbert. It works based on Bernoulli's principle and also due to friction. First the electric supply id given to the vacuum cleaner. Then the electrical energy is converted into mechanical energy by the fan inside it. The fan rotates and there is suction from the atmosphere. A filter is placed for the filtration of dust. Finally, the air is exhausted. A high pressure is produced in front of the fan and a low pressure is produces at the back of the fan. Feedbacks were given and the doubts were cleared. The next presentation was given by Abila on the topic 'MIKE'. Sir Charles coined the term 'microphone'. It was invented by Emile Berliner. It defects the sound signals. It converts sound into electrical signals and send it to the amplifier. It reaches the speaker and loud sound is heard. The mike and amplifier play important roles in this circuit. PIC microprocessor controls all the function of the mike. A mixer is present inside a mike. Some additional data were given to us about mike by the judges. S.Sanjana presented her PPT on the topic 'EMERGENCY LAMP'. The founder of emergency lamp is Jeff Brooks. It's a battery- backed lighting device. The amplifier and the current booster are connected to a step-up transformer in an emergency light. A charger circuit is connected to a rechargeable battery which is then connected to an

oscillator. The step-up transformer is connected to the lamp load. Current booster provides current to the lamp if there is any fault with the circuit. Rechargeable battery refers to the battery which can be charged again and again. There are two mode electors. In the economy mode elector, the brightness will be low whereas in the bright mode elector, the brightness will be high. Feedbacks were given on her talk. R.J.Jenisha explained her PPT on the topic 'BATTERY CHARGER'. A battery charger is a device which is used for charging batteries. We see a LED light glowing when we connect a battery charger to a plug. It indicates that the electric gadget is being charged by the battery charger. If it's over charged, a sound is made using a small buzzer. A capacitor and a voltage sensor is present inside the battery. Its advantage is that is convenient and has a better performance. It's used to charge inverter, mobile, emergency light and several other electric items. The next presentation was given by K.R.Aruna. Her topic was 'WEATHER MONITOR'. She listed few instruments used to find weather. They are:

Thermometer : Used to measure temperature

Barometer : Used to measure atmospheric pressure

Hygrometer : Used to measure humidity

Anemometer: Used to measure wind speed

Rain gauge : Used to calculate rainfall

Disdrometer: Used to measure rainfall and snow size distribution

Ceilometer : Used to determine the height of a cloud base

Transmissometer : Used to measure the extinction coefficient of atmosphere

First the power supply is given to the micro controller. The pulse rate sensor and the temperature sensor play a major role in this circuit. ADC which stands for Analog Digital Controller is attached to the temperature sensor. This senses the weather and gives the output. Satellites are used for weather forecasting. Geostationary satellites like INSAT and Polar orbiting weather satellites are used for weather forecasting.

The yellow team members were given the next chance to present their PPTs. First J.S.Edin Jijo gave his presentation on the topic 'DIGITAL CAMERA'. Digital camera was introduced by KODAK engineer Stevenson Sasson in 1975. It is used to capture photographs and also for recording. Its main components include power button, menu button, shutter release button, timer and flash. He explained the inner view of the camera. When an image is captured in a camera, it is taken up-side down. A process takes place inside the camera and then the image will be stored in the memory card.

Input Process Output

After the feedback session, PPT was done by P.K.Raghul on the topic 'SPEAKER'. The inventor of speaker is believed to be Alexander Graham Bell.. Edward W.Kellogg and

Chester W.Rice were the persons who found the speaker first. It is used for communication. It is used in almost every public places like railway stations, weddings and parties, airports etc. Humans have vocal cords in voice box. Similarly a speaker is required for a loud sound. Its main components include dust, cap, voice coil, magnet, diaphragm, basket, spider and suspension. Some of the types of speakers are:

- Horn speakers
- Electro dynamic loudspeaker
- Flat panel speaker
- Diaphragm speaker
- Plasma Arc speaker
- Piezoelectric speaker

When the electricity is [passed through the magnet, a magnetic field is produced inside the speaker. This magnetic field enables the speaker to produce a loud sound. The next presentation was given by T.S.Argineshya. Her topic was 'SCANNER'. The scanner was discovered by Ray Kurzweil. Its advantages are:

- It provides high quality images.
- It is much more reliable and dependable.
- It can create digital copies.
- It converts hard copy into digital forms.

The power supply is passed to the scanner amplifier. The control signal input is given. The scanner amplifier consists of position detection, position correction, scanner drive stage and input conditioning. The scanner drive stage sends the input to the scanner. Then the settings are done using computer. Finally, it is processed. D.Vishal gave his presentation on the topic 'ECG'. ECG stands for Electro-Cardiogram. Its uses are:

- Determination of the cardiac disease
- Save people from death
- Identify heart problems
- Identify hear rate and rhythm

The ECG scans our body and the image is processed in a LCD or a computer. A.Malavika gave her technical presentation on the topic 'PRINTER'. A printer is a piece of hardware for a computer. It was invented ion the year 1938 by Chestor Carlson. It contains ink cartridge which stores ink in it. Paper feed is a place in which papers are given or stored in a printer. Control panel in computer is used to change the settings of a printer. A memory card stores the data. There are various types of printer:

- Inkjet printer
- Plotters
- Laser printer
- Dot-matrix printer
- Daisy wheel printer
- Dye sublimation printer

Printers are used in all the homes nowadays. They help us to make more copies of documents and also to print images and other files. Then, V.L.Vijayaraj gave his presentation on the topic 'FIRE ALARM RADIO'. When the fire breaks out, a sensor present in the fire alarm radio senses it. Transformer, rectifier and filter, regulator, relay and comparator are all present in the circuit. An alarm is fixed at the end of the circuit. When the sensor senses it, the sound is heard from the alarm. It is similar to that of an electric bell's working. Its technical working was said by the judges. S.Leena Saju presented on the topic 'MAGNETIC TRAIN'. She explained the concept with the help of charts and diagrams. Magnetic train has become one of the fastest means of transport nowadays. Frequency reference signal for speed control is connected to the controller. A magnetic train has a speed sensor fixed in it. Three phase power input is given to the train. The train moves due to the magnetic field produced in the lines and tracks. Some suggestions on her talk were given.

The next turn was that of red team's. First the leader of red team, S.Abina came forward and presented her PPT on the topic 'EB TRANSFORMER'. A transformer can be defined as an electric device which helps in increasing or decreasing the voltage. Otto Blathy was the main person behind the invention of the transformer. The transformer has a laminated core. The primary winding of transformer is connected to the AC source. The output is given at the secondary coil. A transformer works on the principle of electromagnetic induction. When AC is given as an input, the primary coil produces an alternate magnetic field around it. Then the current is induced alternately to the secondary coil. Thus, we get the output. Transformers are of two types- step up transformer and step down transformer. She listed its uses and applications. Some additional information was given by the judges. The power of primary coil is 200 W. The input current of the primary coil is 10 ampere and its input voltage is 20 V. When voltage is increased, the current is decreased. The input power will be equal to the output power. Her presentation was followed by R.S.Raksha. Her topic was 'PEN DRIVE'. Pen drive is a portable storage device which can store data from 250MB to 16GB. It is small enough to fit in a pocket. Its advantages include

- Portable

- Stores data

Quicker than older technologies

Its disadvantage is that it can store data only to some limitation. Its components are memory chip, memory controller, resistor, capacitor and transistor. A LED light glows when the USB header is connected to a computer. This indicates that the pen drive is connected to the computer. A lock switch is present at the side which enables us to lock the ability of the pen drive to store any other data. After the feedback session, we had a small tea break at 2:45 pm. We had our tea and snacks.

The next session began by 2:55 pm. The presentation of red team was continued by the co-leader of red team, A.S.Induja. Her topic was 'TAPE RECORDER'. A tape recorder is used to record and reproduce sound. It was invented by Alexander Graham Bell. The magnetic tape was invented by Valdemar Poulsen. There are two types of tape recorder. One is the reel-to-reel tape deck. In this, the tape is held in a reel. The other one is the cassette deck. It is a type of machine for playing and recording audio compact cassettes. She explained the working of a tape recorder based on two positions. On play position, the electricity is passed through the magnetic head and is amplified by the head amplifier. A switch is present in between followed by an A.F. amplifier. Then the sound is heard through the speakers present inside it. On recording position, a mike or any other source of signal is given to the amplifier. An A.F. amplifier is present followed by an equalizer. Finally the source of sound goes to the magnetic head. Tape recorder uses the electromagnetic phenomena to record and reproduce sound waves. The tape consists of a plastic packing. The recording head has a C-shaped magnet. The sound waves are converted by a microphone. Its uses are:

- To record sound
- Used as a radio
- Provide cheap and interactive educational activities for students
- To pre-record many programs content such as advertising.
- Sounds could be duplicated from tape to tape.

Next it was the turn of Pradeep Narayanan to present his PPT on the topic 'ROBOTS'. The structural parts of a robot include 25 degrees of freedom, LiPo battery, embedded CPU with Wi-Fi, emotions, voice synthesis, voice recognition, 2 cameras, switchable head, prehensile hands and Linux OS. The robots are used for mapping and navigation technology. Planetary surfaces can be explored using the robots. They also help in path planning and mining. PID controller and DC motor play major roles in the working of robots. The motor is connected to the robotic arm link which is then connected to the encoder. Some suggestions were given on his presentation. Next C.J.Nivedh Sankar gave his presentation on the topic 'NETWORK SWITCH'. The network switch is a computer working device. It sends the data from one PC to another. There are four layers in a

network switch. The remote administrator is linked to a modem. The modem is connected to a power source and it is finally connected to a router. This switch enables to send and receive data from other computers. The technical working of 'RADIO' was explained by P.R.Raghul. The radio was invented in 1873 by Marconi. Radios are used for wireless networks and radio broadcasting nowadays. A tuning circuit is present in the radio. High pass filter and the demodulator are connected to the amplifier along with the tuning circuit. The amplifier amplifies the sound. A circuit is placed in the radio for controlling the frequency. Finally, the sound is heard. S.Nishanth gave his presentation on the topic 'MULTIMETER'. Multimeter is a multi-purpose meter. The voltage to be measured is connected to the multimeter. Then the attenuator and rectifier are present. This sends the signals to the multi stage amplifier. Finally, the display is made in the multimeter. The next presentation was given by V.G.Vinod. His topic was 'GRINDER'. Mr. Sabapathy and others invented the mechanical wet grinder. When the switch is on, the motor inside the grinder rotates which in turn rotates the belt. The rotation of the belt makes other parts present above it to rotate and finally the grinder is totally rotated. The rotation of the grinder makes the substance added into it to be fully grinded. Thus, we obtain the substance is a solid-liquid form. The feedbacks and some additional data were given by the judges. Last but not the least, blue team members presented their PPTs. S.S.Akshaya explained the technical working of 'WRIST WATCH'. The wrist watch was invented by Patek Philippe in the year 1868. A watch is a small timepiece which is tied on wrist. It shows us the time of the day. Alarms can be set in a wrist watch. During the olden days, a small pendulum was used in watches. People often used to screw their watches for working. Its merits include its simplicity and accuracy. It is easy to carry from one place to another when compared to wall clocks. Some watches may contain small markings which is one of its demerits. The power source is given. It is connected to a counter followed by an oscillator. This helps the wrist watch to show the display. Further information was given by the judges. J.S.Ashmi from blue team gave her presentation on the topic 'OFFSET PRINTER'. It was discovered by Robert. Water rollers are linked to the ink rollers in an offset printer. A plate cylinder is placed between the ink rollers and the offset cylinder. Then the impression cylinder is placed. Finally the paper is kept. All these components involve together to print the image or text on a paper. The next PPT was given by M.Seanna from blue team. Her topic was 'AIR CONDITIONER'. Willis Carrier designed the air conditioner first. It is used to maintain the air according to the human comfort. The main parts of an air conditioner include compressor, condenser and evaporator. The air conditioner takes the air present in the surrounding and then cools it with the help of condenser. Thus, cool air reaches us. Some suggestions were given by the judges. Rudra Sathish from blue team gave her presentation on the topic 'TELEVISION'. Television is a telecommunication media. John Logie invented the television. It is used for entertainment, education and for watching live and new programmes. CRT converts video signal into visual signal in a television.

Tuner and amplifier are present in a television. Demodulators play an important role. Audio amplifier, video amplifier and sync separator are present which enables us to hear the sounds and view the images in the screen. The flyback transformer is connected to TV which controls the power supply. Adlin Bala from blue team explained the technical working of 'TRAIN'. Train was invented by Richard Trevithick in 1803. Trains are of different types depending upon their engines. They may have steam, diesel or electric engine. In a train which uses coal, the coal and water is put into a place and is heated. The air is pushed out through a chimney-like structure present in a train. Coal trains were used in olden days. Nowadays, modern trains and electric trains are being used. The technical working of a 'TUBE LIGHT' was explained by V.Shyam Saga of blue team. Tube light is a device which emits light. It was invented by Peter Copper. Its main parts are choke or ballast, starter and tube. Chokes are of various types. They are

Copper choke

Polyester choke

Electronic choke

Starter contains capacitor and blinker. UV rays are emitted from tube light but we humans are unable to see them with our naked eye. V.Naveen Jith gave his presentation on the topic 'BICYCLE'. Bicycle was invented by Kirkpatrick Macmillan. It is used for transportation. The force is given in the pedal. This rotates the pedal which rotates the crank arm. This makes the chain to rotate. The back wheel is fixed to the frame which is fixed to the front wheel and the front seat. Front brakes and head tube are present in front of the bicycle. By this, the presentations got over. A Maria College student who helped us by operating the project and computer gave remarks about our PPTs. Then KAP students like S.Dani Rovas from maroon team, A.S.Induja from red team, Srinidhi from green team, P.K.Raghul from yellow team and Rudra from blue team gave short feedbacks. Mr.Berjin gave us some tips to present our PPTs. He said that we eight grade students have done a great job. The text should be very less in a slide. We shouldn't copy and paste the material from internet directly. We should understand the concept and only the keywords should be used in a presentation. We should know the contents of our topic. Curiosity is very important which makes us to find more details about the topic. A.S.Lekshmi, the former young scientist gave feedback. She said that we did our presentations without fear. Paragraphs should be avoided in a presentation. We should explain the concept in our own words and shouldn't muck up anything. Eye to eye contact is very important during a presentation. The meeting was concluded by Mr.Velaian. He thanked Mari College of Engineering and Technology, Attoor. We developed our answering and presentation skills through this technical presentation programme. Our interaction was very good, he said. He reminded us once again about the National Science Day on February 28. The programme got over by 4:50 pm with National Anthem.

The technical presentation for absentees was conducted on 15-02-2015 at Maria College of Engineering and Technology, Attoor at 2:00 pm. Mr.Mullanchery M.Velaian, the organizer of KAP gave us a short talk. He told about the way that people correct our reports and research topics. The person who corrects our mistakes is the real guide and the corrections made can mould us, he said. The person who tells that our report or information is very good or very bad is not a real guide. The judges were present to judge the presentation skills of the students. The judges were Capt.Bennet Singh, Shri.Shibin Tad and Shri.L.Edwin Sam. J.M.Jereshea from maroon team presented her PPT on the topic 'REFRIGERATOR'. The refrigerator was invented by Oliver Evans in the year 1804. It's a cooling machine. It is used for storage and preservation of food. It preserves food by slowing down bacterial decay. It has a compressor which compresses the gas by giving high temperature and pressure. The condenser present in a refrigerator cools down the food items. Other parts such as ventilation fins, expansion device and evaporator are also present. The evaporator vaporizes the compression cycle. When power supply is given to a refrigerator, compressor pump draws air from the atmosphere. The high-pressure gas is converted into low-pressure gas and it passes through the condenser. The heat is sent out through the radiator fins. An expansion valve is present followed by an evaporator. This cycle repeats. She listed the tips to protect and maintains refrigerator:

- Day-to-day maintenance

- Monthly maintenance

- Every three months maintenance

Its merits are that it prevents spoilage of food and freezing stops multiplication of microorganisms. It requires lot of electricity which is one of its demerits. Feedbacks on her talk were given. We cleared our doubts. CFC is used in refrigerators and the reason is that it has cooling capacity. In refrigerator, compressor consumes more power. Refrigerators shouldn't be placed near combustible substances, as they may explode. The next presentation was given by B.Abhirami, the leader of yellow team on the topic 'STOP WATCH'. The stop watch gives the accurate time. It was invented by Samuel Watson. To measure time intervals, first the knob is pressed to bring the minutes hand and the second hand to zero. The knob is pressed again for measuring the time. Pressing the knob once again stops the minutes and seconds hand and the time is noted. S.Ayana Treesa Raj explained the technical presentation of 'ROCKET'. The theory work of rocket was done by Konstantin and the practical work was done by Robert Goddard. The rocket works based on the third law of Sir Isaac Newton. The law states that 'For every action, there is an equal and opposite reaction'. Four systems are present in a rocket. They are the payload system, guidance system, propulsion system and the structure system. Rockets are used in military and space research. The co-leader of yellow team, J.M.Mereshiya gave her presentation on the topic 'COMPUTER'. Computer is an

electronic machine. They are more complex. It was founded by Charles Babbage in the year 1822. Charles Babbage is known as the 'Father of Computer'. The data is given through the input device to the CPU (Central Processing Unit). The main internal memory is lined to the CPU. The CPU processes the data and the output is received via the output devices. The motherboard present inside the CPU connects hardware and processor. RAM (Random Access Memory) is used for storing purposes. Hard drives are also used for storage purposes. Computers are used for communication and it reduces manual work. If we spend too much time in computers, it may damage our eyesight. Suggestions on her talk were given. The next PPT was given by Soorya Vijay. Her topic was 'CCTV'. CCTV was designed by Walter Bruch in the year 1942. There are two types of CCTV. They are - Analog CCTV and Digital CCTV. The digital CCTV uses IP (Internet Protocol). A control unit is present to control the functioning of a CCTV. The control unit is connected to a modem and communication interface. The images and videos are stored in the memory and are viewed through LCD or any other monitors. She listed its advantages and disadvantages. The next presentation was done by A.G.Ageesha from green team on the topic 'X-RAY'. X-Ray was invented by a German physicist named Wilhelm Roentgen. X-rays are electromagnetic waves like radio and light waves. X-rays are widely used in medical fields. The power supply is given to the function generator. A power amplifier is connected to the control circuit and to the electrodes. The electrodes are responsible for taking x-rays of the body. The images are then viewed. A presentation on 'LED TV' was given by K.K.Prabin Kumar of maroon team. The power supply is given to the LED TV. The TV is connected to the backlight driving circuit. Signal process board and standby power are also connected to the LED. Red, green and blue LED arrays are produced as output. The LED display panel is kept in front. Then the local dimming screen is kept followed by full array LED backlighting. R.Kowsanth Kalidas from maroon team presented his PPT on the topic 'ELCB'. ELCB stands for Earth Leakage Circuit Breaker. An Earth Leakage Circuit Breaker is a device used to directly detect currents leaking to earth from an installation and cut the power. It is mainly used in TT earthing systems. One phase is connected to neutral load and another phase is connected to a metal body part. The technical working of LAND PHONE' was given by J.Immaculate Rishvi from yellow team. The inventor of land phone is Alexander Graham Bell. Transmitter and receiver are the two major parts of a land phone. The antenna receives the signal and sends it to the receiver. This signal is the passed through the decoder and a circuit for audio dialer. The auto dialer and digital recorder send the signal to the land phone. By this way, we can hear another person speaking to us. In the same way, when we dial the numbers, the signal is send to the transmitter. Then the signal passed through the encoder which finally reaches antenna. By this way, other person can her what we speak. Its advantages are that it saves time, money and energy. It is widely used everywhere for communication purposes. Suggestions on her talk were given by the judges. Then, Jefin R.Wensely, the leader of blue team gave his

presentation on the topic 'FAN'. The fan was invented by Philip Diehl in the year 1882. It is cost effective when compared to air conditioners. It has a motor, three or four blades, rotator and switch cap. The fan works on the principle of electromagnetic induction. The magnet present inside the fan becomes an electromagnet when current is passed through it. It makes the fan blades to rotate and thus the air is pushed out. His presentation was followed by the co-leader of blue team, Shalomi. Her topic was 'SOLAR HEATER'. Solar heater provides hot water using solar energy. A solar panel is placed at the top of a building. A controller is present at the bottom which is connected to the pump. Controller is then connected to taps, tank and boiler. A solar water heater uses a renewable energy to produce electricity. Hence, it is very useful to us. It doesn't use electricity for its process. The solar panel is kept at the top of roof where maximum sunlight is available. M.Sabrina Lynette Fernando from red team gave her presentation on the topic 'DVD PLAYER'. The disc is inserted in the DVD player tray. The digital signal is converted into analog signal by a converter. A signal amplifier is present which amplifies the signal and sound. Then, we get the output. Mejalin Arno from red team explained the technical working of 'WATER PUMP'. Water pump is a device that moves water, fluids or gases by mechanical action. It works based on centrifugal force. When AC power is given to the pump, the motor is rotated which makes the impeller to rotate. A pressurizer and relay is also present in a water pump. Finally, the water is pumped and is used. The last presentation was given by Sree Meera Subramaniyam on the topic 'MOTOR CYCLE'. She presented her topic with the help of charts. The air is drawn in and it is compressed. The piston moves up and down. The chain is made to rotate and then the wheels are rotated. Some suggestions were given on her talk. Shri.L.Edwin Sam gave us some feedbacks. He emphasized the importance of block diagram. Captain.Bennet Singh also gave the remarks. Finally, the meeting was concluded by Mr.Velaian. The technical presentation improved my presentation and answering skills. This meeting gave me more experiences. It made me to present my PPT without fear. Interaction and eye-to-eye contact skills were also improved. I express my indebted thanks to KAP organizer, Mr.Velaian and KAP. THANKS TO KAP.....