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MEASURING DEVICES

"OLED"

TRENDS ' N ' INS

TECH & APTS FOR 'U'

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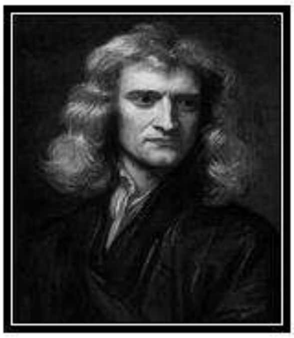


Measuring devices

Accelerometer
Used to measure acceleration.
Actinometer
Used to measure Heating power of sunlight.
Alcoholometer
Alcoholic strength of liquids
Altimeter
Used to measure altitude
Ammeter
Used to measure electric current
Anemometer
Used to measure wind speed
Atmometer
Used to measure rate of evaporation
Audiometer
Used to measure the hearing
Barometer
Used to measure the air pressure
Bevameter
Used to measure the mechanical properties of soil
Bolometer
Used to measure Electromagnetic radiation
Calorimeter
Used to measure Heat of chemical reaction
Ceilometer
Used to measure Height of the cloud base
Chronometer
Used to measure Time
Colorimeter
Used to measure Colour
Creepmeter
Used to measure Slow surface displacement of an active geologic fault in the earth
Declinometer
Used to measure Magnetic declination
Densimeter
Used to measure Specific gravity of liquid
Densitometer
Used to measure Degree of darkness in photographic or semitransparent material
Diffractiometer
Used to measure Structure of crystal
Disdrometer
Used to measure Size,speed and velocity of rain drops.
Dosimeter
Used to measure Exposure to hazards,especially radiation.
Durometer
Used to measure Hardness.
Dynameter
Used to measure Magnification of telescope.
Dynamometer
Used to measure Force or torque
Elaeometer
Used to measure Specific gravity of oils.
Electrometer
Used to measure Electric charge
Eudiometer
Used to measure Change in volume of gas mixture following composition.
Evaporimeter
Used to measure Rate of evaporation
Galvanometer
Used to measure Electricity
Graphometer
Used to measure Angles
Heliometer
Used to measure Variation of suns diameter
Hydrometer
Used to measure Specific gravity of liquid.
Hygrometer
Used to measure Humidity

Interferometer

Used to measure Wave interference

Katharometer

Used to measure Composition of gases.

Lactometer

Used to measure Specific gravity of milk.

Magnetometer

Used to measure Strength of magnet

Mass spectrometer

Used to measure Masses of ions,used to identify chemical substances through their mass spectra.

Multimeter

Used to measure Electrical potential,resistance and current.

Nephelometer

Used to measure Particle in a liquid.

Odometer

Used to measure Distance.

Ohmmeter

Used to measure Electrical rsistance.

Osmometer

Used to measure Osmotic strength of solution, colloid, or compound.

Pedometer

Used to measure Steps.

pH meter

Used to measure pH(chemical acidity/basicity of the solution)

photometer

Used to measure illuminance or iradiance

polarimeter

Used to measure rotation of polarized light

Psychrometer

Used to measure Humidity

Pycnometer

Used to measure Fluid density

Pyranometer

Used to measure Solar radiation

Pyrometer

Used to measure High temperature

Saccharometer

Used to measure Amount of sugar in a solution

Seismometer

Used to measure Earth quake

Spectrometer

Used to measure Properties of light

Spectrophotometer

Used to measure Intensity of light as a function of wave length

Speedometer

Used to measure Speed velocity

Sphygmomanometer

Used to measure Blood pressure

Strainmeter

Used to measure Seismic strain

Tacheometer

Used to measure Distance

Tachometer

Used to measure RPM

Taximeter

Used to measure Distance traveled

Tensiometer

Used to measure Surface tension of liquid

Thermometer

Used to measure Temperature

Viscometer

Used to measure Viscosity of fluid

Voltmeter

Used to measure Electri potential,voltage

Wattmeter

Used to measure Electrical power

Zymometer

Used to measure Fermentation.

By

M.Balachandhar

Final Year (MEIEA)

Organic light-emitting diode

Sony XEL-1, the world's first OLED TV.

An **organic light emitting diode** (**OLED**), also **light emitting polymer** (**LEP**) and **organic electro luminescence** (**OEL**), is a light-emitting diode (LED) whose emissive electroluminescent layer is composed of a film of organic compounds. The layer usually contains a polymer substance that allows suitable organic compounds to be deposited. They are deposited in rows and columns onto a flat carrier by a simple "printing" process. The resulting matrix of pixels can emit light of different colors.

History

A. Bernanose and co-workers at the Nancy-Université, first produced electroluminescence in organic materials in the early 1950s by applying high-voltage alternating current (AC) fields in air to acridine orange and quinacridine either deposited on or dissolved in cellulose or cellophane thin films. They proposed a mechanism of either direct excitation of the dye molecules or excitation of electrons.

In 1960,Martin Pope and his group made the seminal discovery of ohmic, dark injecting electrode contacts to organic crystals, and described the necessary energetic requirements (work functions) for hole and electron injecting electrode contacts. Dark injecting hole and electron injecting electrode contacts are the basis of all current OLED devices, molecular and polymeric, as will be pointed out in the description of the requirements for the construction of successful OLEDs.

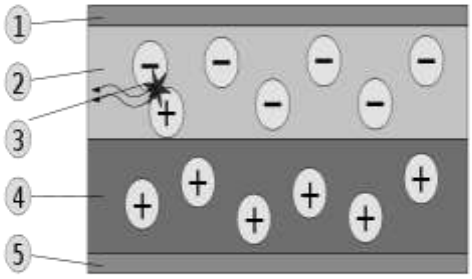
Working principle

A typical OLED is composed of an emissive layer, a conductive layer, a substrate, and anode and cathode terminals. The layers are made of organic molecules that conduct electricity. The layers have conductivity levels ranging from insulators to conductors, so OLEDs are considered organic semiconductors.

The first, most basic OLEDs consisted of a single organic layer, for example the first light-emitting polymer device synthesised by Burroughs et al. involved a single layer of poly (p-phenylene vinylene). Multilayer OLEDs can have more than two layers to improve device efficiency. As well as conductive properties, layers may be chosen to aid charge injection at electrodes by providing a more gradual electronic profile,or block a charge from reaching the opposite electrode and being wasted.

Schematic of a 2-layer OLED: 1. Cathode (−), 2. Emissive Layer, 3. Emission of radiation, 4. Conductive Layer, 5. Anode (+).A voltage is applied across the OLED such that the anode is positive with respect to the cathode. This causes a current of electrons to flow through the device from cathode to anode. Thus, the cathode gives electrons to the emissive layer and the anode withdraws electrons from the conductive layer; in other words, the anode gives electron holes to the conductive layer.

Soon, the emissive layer becomes negatively charged, while the conductive layer becomes rich in positively charged holes. Electrostatic forces bring the electrons and the holes towards each other and they recombine. This happens closer to the emissive layer, because in organic semiconductors holes are more mobile than electrons. The recombination causes a drop in the energy levels of electrons, accompanied by an emission of radiation whose frequency is in the visible region. That is why this layer is called emissive.The device does not work when the anode is put at a negative potential with respect to the cathode. In this condition, holes move to the anode and electrons to the cathode, so they are moving away from each other and do not recombine.



Indium tin oxide is commonly used as the anode material. It is transparent to visible light and has a high work function which promotes injection of holes into the polymer layer. Metals such as aluminium and calcium are often used for the cathode as they have low work functions which promote injection of electrons into the polymer layer.Just like passive-matrix LCD versus active-matrix LCD, OLEDs can be categorized into passive-matrix and active-matrix displays. Active-matrix OLEDs (AMOLED) require a thin-film transistor backplane to switch the individual pixel on or off, and can make higher resolution and larger size displays possible.

Material technologies

Small molecules

OLED technology using small molecules was first developed at Eastman Kodak by Dr. Ching W. Tang. The production of small-molecule displays often involves vacuum deposition, which makes the production process more expensive than other processing techniques (see below). Since this is typically carried out on glass substrates, these displays are also not flexible, though this limitation is not inherent to small-molecule organic materials. The term OLED traditionally refers to this type of device, though some are using the term SM-OLED.

Molecules commonly used in OLEDs include organo-metallic chelates (for example Alq3, used in the first organic light-emitting device) and conjugated dendrimers.

Contrary to polymers, small molecules can be evaporated and therefore very complex multi-layer structures can be constructed. This high flexibility in layer design is the main reason for the high efficiencies of the SM-OLEDs.

Recently a hybrid light-emitting layer has been developed that uses nonconductive polymers doped with light-emitting, conductive molecules. The polymer is used for its production and mechanical advantages without worrying about optical properties. The small molecules then emit the light and have the same longevity that they have in the SM-OLEDs.

Coherent emission from a laser dye-doped tandem OLED device, excited in the pulsed regime, has been demonstrated. The emission is nearly diffraction limited with a spectral width similar to that of broadband dye lasers.

Patternable OLED

Patternable organic light-emitting device (POLED) uses a light or heat activated electroactive layer. A latent material (PEDOT-TMA) is included in this layer that, upon activation, becomes highly efficient as a hole injection layer. Using this process, light-emitting devices with arbitrary patterns can be prepared.

Organic Vapor Jet Printing

OVJP uses an inert carrier gas, such as Argon or Nitrogen, to transport evaporated organic molecules (as in Organic Vapor Phase Deposition). The gas is expelled through a micron sized nozzle or nozzle array close to the substrate as it is being translated. This allows printing arbitrary multilayer patterns without the use of solvents.

Backplane technologies

For a high resolution display like a TV, a TFT backplane is necessary to drive the pixels correctly. Currently, LTPS-TFT (low temperature poly silicon) is used for commercial AMOLED displays. LTPS-TFT has variation of the performance in a display, so various compensation circuits have been reported. Due to the size limitation of the excimer laser used for LTPS, the AMOLED size was limited. To cope with the hurdle related to the panel size,amorphous-silicon/microcrytalline-silicon backplanes have been reported with large display prototype demonstrations.

OLED Structures

Bottom emission/Top emission

Bottom emission uses a transparent or semi-transparent bottom electrode to get the light through a transparent substrate. Top emission uses a transparent or semi-transparent top electrode to get the light through the counter substrate.

Transparent OLED

Transparent organic light-emitting device (TOLED) uses a proprietary transparent contact to create displays that can be made to be top-only emitting, bottom-only emitting, or both top and bottom emitting (transparent). TOLEDs can greatly improve contrast, making it much easier to view displays in bright sunlight. This technology is used in Head-up displays.

Stacked OLED

Stacked OLED (SOLED) uses a pixel architecture that stacks the red, green, and blue subpixels on top of one another instead of next to one another, leading to substantial increase in gamut and colour depth, and greatly reducing pixel gap. At the moment, all display technologies have the RGB (and RGBW) pixels mapped next to each other.

Inverted OLED

In contrast to a conventional OLED, in which the anode is placed on the substrate, an Inverted OLED (IOLED) uses a bottom cathode that can be connected to the drain end of an n-channel TFT especially for the low cost amorphous silicon TFT backplane useful in the manufacturing of AMOLED displays.

Advantages

The radically different manufacturing process of OLEDs lends itself to many advantages over flat-panel displays made with LCD technology. Since OLEDs can be printed onto any suitable substrate using an inkjet printer or even screen printing technologies, they can theoretically have a significantly lower cost than LCDs or plasma displays. Printing OLEDs onto flexible substrates opens the door to new applications such as roll-up displays and displays embedded in fabrics or clothing.

OLEDs enable a greater range of colours, gamut, brightness, contrast (both dynamic range and static) and viewing angle than LCDs because OLED pixels directly emit light. OLED pixel colours appear correct and unshifted, even as the viewing angle approaches 90 degrees from normal. LCDs use a backlight and cannot show true black, while an off OLED element produces no light and consumes no power. Energy is also wasted in LCDs because they require polarizers that filter out about half of the light emitted by the backlight. Additionally, colour filters in most colour LCDs filter out two-thirds of the light; technology to separate backlight colours by diffraction has not been widely adopted. OLEDs also have a faster response time than standard LCD screens. Whereas the fastest LCD displays currently have a 2ms response time, an OLED can have less than 0.01ms response time.

Disadvantages

The biggest technical problem for OLEDs is the limited lifetime of the organic materials. In particular, blue OLEDs historically have had a lifetime of around 14,000 hours (five years at 8 hours a day) when used for flat-panel displays, which is lower than the typical lifetime of LCD, LED or PDP technology—each currently rated for about 60,000 hours, depending on manufacturer and model.

However, some manufacturers of OLED displays claim to have come up with a way to solve this problem with a new technology to increase the lifespan of OLED displays, pushing their expected life past that of LCD displays. A metal membrane helps deliver light from polymers in the substrate throughout the glass surface more efficiently than current OLEDs. The result is the same picture quality with half the brightness and a doubling of the screen's expected life.

In 2007, experimental OLEDs were created which can sustain 400 cd/m² of luminance for over 198,000 hours for green OLEDs and 62,000 hours for blue OLEDs. Additionally, as the OLED material used to produce blue light degrades more rapidly than other materials that produce other colors, blue light output will decrease relative to the other colors of light. This differential color output change will change the color balance of the display and is much more noticeable than a decrease in overall luminance. This can be partially avoided by adjusting colour balance but this may require advanced control circuits and interaction with the user, which is unacceptable for some uses.

The intrusion of water into displays can damage or destroy the organic materials. Therefore, improved sealing processes are important for practical manufacturing and may limit the longevity of more flexible displays.

Acronyms for OLEDs

- OLED = Organic Light Emitting Diode/Device/Display
- AM OLED = Active Matrix OLED device
- FOLED = Flexible Organic Light Emitting Diode (UDC)
- NOID = Neon Organic Iodine Diode (CDT)
- PhOLED = Phosphorescent Organic Light Emitting Diode (UDC)
- PLED = Polymer Light Emitting Diode (CDT)
- PM OLED = Passive Matrix OLED device
- POLED = Patternable organic light-emitting device
- RCOLED = Resonant Colour Organic Light Emitting Diode
- SmOLED = Small Molecule Organic Light Emitting Diode (Kodak)
- SOLED = Stacked Organic Light Emitting Diode (UDC)
- TOLED = Transparent Organic Light Emitting Diode (UDC)

Manufacturers

Current manufacturers of OLED panels include Anwell Technologies Limited, Chi Mei Corporation, DuPont, GE Global Research, LG, Samsung, and Sony.

By

N.Jayanthi

Lect.EIE(MEIEA)

ROBOTICS

Origins

Stories of artificial helpers and companions and attempts to create them have a long history, but fully autonomous machines only appeared in the 20th century. The first digitally operated and programmable robot, the Unimate, was installed in 1961 to lift hot pieces of metal from a die casting machine and stack them. Today, commercial and industrial robots are in widespread use performing jobs more cheaply or more accurately and reliably than humans.

They are also employed in jobs which are too dirty, dangerous, or dull to be suitable for humans. Robots are widely used in manufacturing, assembly, and packing; transport; earth and space exploration; surgery; weaponry; laboratory research; safety; and mass production of consumer and industrial goods. According to the *Oxford English Dictionary*, the word *robotics* was first used in print by Isaac Asimov, in his science fiction short story "Liar!", published in May 1941 in *Astounding Science Fiction*.

Components of robots

Structure

The structure of a robot is usually mostly mechanical and can be called a kinematic chain (its functionality being similar to the skeleton of the human body). The chain is formed of links (its bones), actuators (its muscles), and joints which can allow one or more degrees of freedom. Most contemporary robots use open serial chains in which each link connects the one before to the one after it. These robots are called serial robots and often resemble the human arm. Some robots, such as the Stewart platform, use a closed parallel kinematical chain. Other structures, such as those that mimic the mechanical structure of humans, various animals, and insects, are comparatively rare.

However, the development and use of such structures in robots is an active area of research (e.g. biomechanics). Robots used as manipulators have an end effectors mounted on the last link. These end effectors can be anything from a welding device to a mechanical hand used to manipulate the environment.

Power source

At present; mostly (lead-acid) batteries are used, but potential power sources could be:

- pneumatic (compressed gases)
- hydraulics (compressed liquids)
- flywheel energy storage
- organic garbage’s (through anaerobic digestion)
- feces (human, animal); may be interesting in a military context as feces of small combat groups may be reused for the energy requirements of the robot assistant
- still untested energy sources (e.g. Joe Cell, ...)
- radioactive source (such as with the proposed Ford car of the '50); to those proposed in movies such as Red Planet

Actuation

Actuators are like the "muscles" of a robot, the parts which convert stored energy into movement. By far the most popular actuators are electric motors, but there are many others, powered by electricity, chemicals, and compressed air.

- **Motors:** The vast majority of robots use electric motors, including brushed and brushless DC on many robots and CNC machines, as their main can specify how much to turn, for more precise control, rather than a "spin and see where it went" approach.
- **Piezo motors:** A recent alternative to DC motors are piezo motors or ultrasonic motors. These work on a fundamentally different principle, whereby tiny piezoceramic elements, vibrating many thousands of times per second, cause linear or rotary motion. There are different mechanisms of operation; one type uses the vibration of the piezo elements to walk the motor in a circle or a straight line. Another type uses the piezo elements to cause a nut to vibrate and drive a screw. The advantages of these motors are nanometer resolution, speed, and available force for their size. These motors are already available commercially, and being used on some robots.
- **Elastic nanotubes:** These are a promising, early-stage experimental technology. The absence of defects in nanotubes enables these filaments to deform elastically by several percent, with energy storage levels of perhaps 10 J/cm^3 for metal nanotubes. Human biceps could be replaced with an 8 mm diameter wire of this material. Such compact "muscle" might allow future robots to outrun and out jump humans.

Sensing

Touch

Current robotic and prosthetic hands receive far less tactile information than the human hand. Recent research has developed a tactile sensor array that mimics the mechanical properties and touch receptors of human fingertips. The sensor array is constructed as a rigid core surrounded by conductive fluid contained by an elastomeric skin. Electrodes are mounted on the surface of the rigid core and are connected to an impedance-measuring device within the core. When the artificial skin touches an object the fluid path around the electrodes is deformed, producing impedance changes that map the forces received from the object. The researchers expect that an important function of such artificial fingertips will be adjusting robotic grip on held objects.

Manipulation

Robots which must work in the real world require some way to manipulate objects; pick up, modify, destroy, or otherwise have an effect. Thus the 'hands' of a robot are often referred to as end effectors, while the arm is referred to as a manipulator. Most robot arms have replaceable effectors, each allowing them to perform some small range of tasks. Some have a fixed manipulator which cannot be replaced, while a few have one very general purpose manipulator, for example a humanoid hand.

- **Mechanical Grippers:** One of the most common effectors is the gripper. In its simplest manifestation it consists of just two fingers which can open and close to pick up and let go of a range of small objects. See industrial robot end effectors.
- **Vacuum Grippers:** Pick and place robots for electronic components and for large objects like car windscreens, will often use very simple vacuum grippers. These are very simple astrictive devices, but can hold very large loads provided the prehension surface is smooth enough to ensure suction.
- **General purpose effectors:** Some advanced robots are beginning to use fully humanoid hands, like the Shadow Hand, MANUS, and the Schunk hand. These highly dexterous manipulators, with as many as 20 degrees of freedom and hundreds of tactile sensors.

Locomotion

Rolling robots

For simplicity, most mobile robots have four wheels. However, some researchers have tried to create more complex wheeled robots, with only one or two wheels. Two-wheeled balancing, Ballbot, Track Robot

Walking robots

Walking is a difficult and dynamic problem to solve. Several robots have been made which can walk reliably on two legs; however none have yet been made which are as robust as a human. Many other robots have been built that walk on more than two legs, due to these robots being significantly easier to construct. Hybrids too have been proposed in movies such as I, Robot, where they walk on 2 legs and switch to 4 (arms+legs) when going to a sprint.

Typically, robots on 2 legs can walk well on flat floors, and can occasionally walk up stairs. None can walk over rocky, uneven terrain. Some of the methods which have been tried are: ZMP Technique, Hopping, Dynamic Balancing, and Passive Dynamics. Other methods of locomotion are, Flying, Snaking, Skating, Climbing, and Swimming

Environmental interaction and navigation

Though a significant percentage of robots in commission today are either human controlled, or operate in a static environment, there is an increasing interest in robots that can operate autonomously in a dynamic environment. These robots require some combination of navigation hardware and software in order to traverse their environment. In particular unforeseen events (eg. people and other obstacles that are not stationary) can cause problems or collisions. Some highly advanced robots as ASIMO, EveR-1, Meinü robot have particularly good robot navigation hardware and software. Also, self-controlled cars, Ernst Dickmanns' driverless car, and the entries in the DARPA Grand Challenge, are capable of sensing the environment well and subsequently making navigational decisions based on this information. Most of these robots employ a GPS navigation device with waypoints, along with radar, sometimes combined with other sensory data such as LIDAR, video cameras, and inertial guidance systems for better navigation between waypoints.

Human-robot interaction

If robots are to work effectively in homes and other non-industrial environments, the way they are instructed to perform their jobs and especially how they will be told to stop will be of critical importance. The people who interact with them may have little or no training in robotics, and so any interface will need to be extremely intuitive. Science fiction authors also typically assume that robots will eventually be capable of communicating with humans through speech, gestures, and facial expressions, rather than a command-line interface.

Control

The mechanical structure of a robot must be controlled to perform tasks. The control of a robot involves three distinct phases - perception, processing, and action (robotic paradigms). Sensors give information about the environment or the robot itself. This information is then processed to calculate the appropriate signals to the actuators (motors) which move the mechanical.

By

S.Syed sha

Final Year (MEIEA)

DESKTOP POWER SUPPLY

Useful for electronics hobbyists, this linear workbench power supply converts a high input voltage (12V) from the SMPS of a PC into low output voltage (1.25 to 9 volts). An adjustable three-pin voltage regulator chip LM317T (IC1) is used here to provide the required voltages. The LM317T regulator, in TO-220 pack, can handle current of up to 1 amp in practice. Fig. 1 shows the circuit of the desktop power supply.

Regulator IC LM317T is arranged in its standard application. Diode D1 guards against polarity reversal and capacitor C1 is an additional buffer. The green LED (LED1) indicates the status of the power input. Diode D2 prevents the output voltage from rising above the input voltage when a capacitive or inductive load is connected at the output. Similarly, capacitor C3 suppresses any residual ripple.

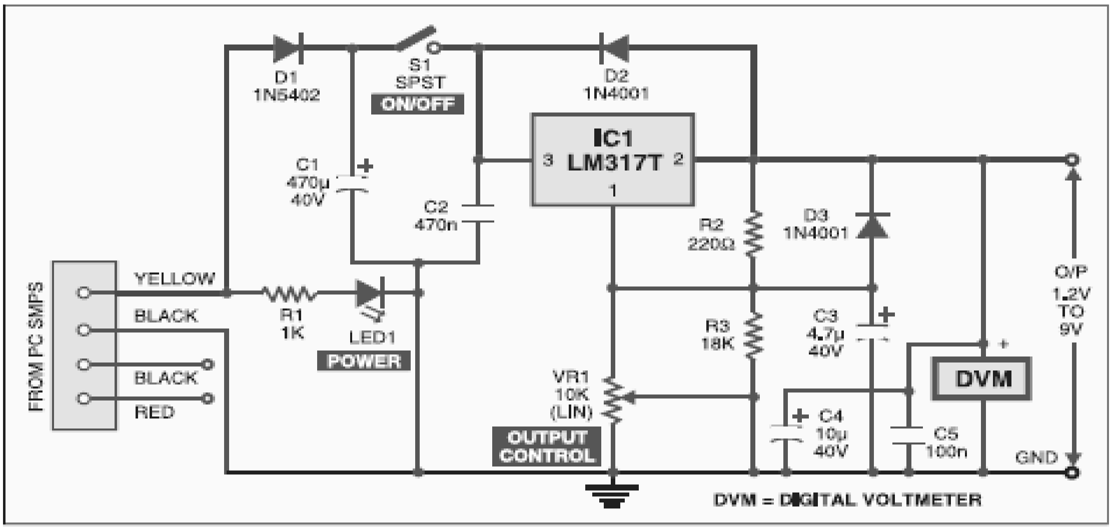


Fig. 1: Circuit of desktop power supply

Connect a standard digital voltmeter in parallel with the output leads to accurately set the desired voltage with the help of variable resistor VR1.

You can also use your digital multimeter if the digital voltmeter is not available. Switch on S1 and set the required voltage through preset VR1 and read it on the digital voltmeter. Now the power supply is ready for use. The circuit can be wired on a common PCB. Refer Fig. 2 for pin configuration of LM317 before soldering it on the PCB.

After fabrication, enclose the circuit in a metallic cover. Then open the cabinet of your PC and connect the input line of the gadget to a free (hanging) four-pin drive power connector of the SMPS carefully.

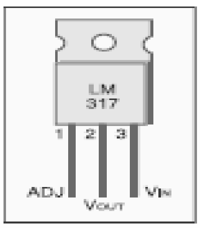


Fig. 2: Pin configuration of LM317

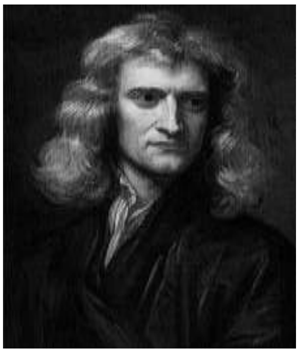
By

M.Dinesh Kumar,

Final Year (MEIEA)

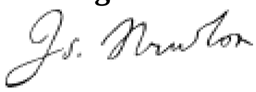
ISAAC NEWTON

Sir Isaac Newton



Born	4 January 1643 Woolsthorpe-by-Colsterworth Lincolnshire, England
Died	31 March 1727 (aged 84) Kensington, Middlesex, England
Residence	England
Nationality	English (British from 1707)
Fields	physics, mathematics, astronomy, natural philosophy, alchemy, theology
Institutions	University of Cambridge Royal Society Royal Mint
Notable students	Roger Cotes William Whiston
Known for	Newtonian mechanics Universal gravitation Calculus Optics

Signature



Sir Isaac Newton FRS (4 January 1643 – 31 March 1727 [OS: 25 December 1642 – 20 March 1727]) was an English physicist, mathematician, astronomer, natural philosopher, alchemist, and theologian who is perceived and considered by a substantial number of scholars and the general public as one of the most influential men in history. His 1687 publication of the *Philosophiæ Naturalis Principia Mathematica* (usually called the *Principia*) is considered to be among the most influential books in the history of science, laying the groundwork for most of classical mechanics.

In this work, Newton described universal gravitation and the three laws of motion which dominated the scientific view of the physical universe for the next three centuries. Newton showed that the motions of objects on Earth and of celestial bodies are governed by the same set of natural laws by demonstrating the consistency between Kepler's laws of planetary motion and his theory of gravitation, thus removing the last doubts about heliocentrism and advancing the scientific revolution.Newton also built the first practical reflecting telescope and developed a theory of color based on the observation that a prism decomposes white light into the many colors that form the visible spectrum.

He also formulated an empirical law of cooling and studied the sound. In mathematics, Newton shares the credit with Gottfried Leibniz for the development of the differential and integral calculus. He also demonstrated the generalized binomial theorem, developed the so-called "Newton's method" for approximating the zeroes of a function, and contributed to the study of power series.

Isaac Newton was born on 4 January 1643 at Woolsthorpe Manor in Woolsthorpe-by-Colsterworth,a hamlet in the county of Lincolnshire. At the time of Newton's birth, England had not adopted the Gregorian calendar and therefore his date of birth was recorded as Christmas Day, 25 December 1642. Newton was born three months after the death of his father, a prosperous farmer also named Isaac Newton. Born prematurely, he was a small child; his mother Hannah Ayscough reportedly said that he could have fit inside a quart mug (≈ 1.1 litre).

From this information, it can be estimated that he was born roughly 11 to 15 weeks early. When Newton was three, his mother remarried and went to live with her new husband, the Reverend Barnabus Smith, leaving her son in the care of his maternal grandmother, Margery Ayscough.

The young Isaac disliked his stepfather and held some enmity towards his mother for marrying him, as revealed by this entry in a list of sins committed up to the age of 19: "Threatening my father and mother Smith to burn them and the house over them." From the age of about twelve until he was seventeen, Newton was educated at The King's School, Grantham (where his signature can still be seen upon a library window sill).

He was removed from school, and by October 1659, he was to be found at Woolsthorpe-by-Colsterworth, where his mother, widowed by now for a second time, attempted to make a farmer of him. He hated farming. Henry Stokes, master at the King's School, persuaded his mother to send him back to school so that he might complete his education. Motivated partly by a desire for revenge against a schoolyard bully, he became the top-ranked student. In June 1661, he was admitted to Trinity College, Cambridge as a sizar—a sort of work-study role. At that time, the college's teachings were based on those of Aristotle, but Newton preferred to read the more advanced ideas of modern philosophers such as Descartes and astronomers such as Copernicus, Galileo, and Kepler. In 1665, he discovered the generalized binomial theorem and began to develop a mathematical theory that would later become infinitesimal calculus.

Soon after Newton had obtained his degree in August of 1665, the University closed down as a precaution against the Great Plague. Although he had been undistinguished as a Cambridge student, Newton's private studies at his home in Woolsthorpe over the subsequent two years saw the development of his theories on calculus, optics and the law of gravitation.

In 1667 he returned to Cambridge as a fellow of Trinity. Newton argued that light is composed of particles or corpuscles, which were refracted by accelerating into a denser medium. He verged on sound-like waves to explain the repeated pattern of reflection and transmission by thin films (Opticks Bk.II, Props. 12), but still retained his theory of ‘fits’ that disposed corpuscles to be reflected or transmitted (Props.13).

Later physicists instead favored a purely wavelike explanation of light to account for the interference patterns, and the general phenomenon of diffraction. Today's quantum mechanics, photons and the idea of wave–particle duality bear only a minor resemblance to Newton's understanding of light.

By

S.Prabakaran

Final Year (MEIEA)

Technical Questions

1. Who is the father of Instrumentation?
2. Why to use 4 to 20ma instead of 0-20ma
3. Which amplifier would you prefer to avoid error due to drift and other low frequency noise source
4. A protective sheath on a thermocouple which provides
5. Op-amp is used in non-linear mode in
6. Moving core in LVDT is made of.
7. For what control rods are used in a nuclear reactor.
8. Half life is determined by.
9. Which Vm is suited for measuring 50v DC?
10. Ayrton shunt to make a D'Arsonval galvanometer into a.
11. An integrating Digital voltmeter measures .
12. Pressure error can be measured by
13. Schotty clamping is resorted to in TTL gates.
14. The number of address lines in 8bit 4k ROM is.
15. Zener diode works in the principle of.
16. IR LED is usually fabricated from.
17. Shaft encoder is used for the measurement of
18. Signal flow graph is used to find.
19. Phase-lag compensation will.
20. What is watch dog in PLC

By
B.Vijay
Final Year (MEIEA)

Aptitude Questions

1. Today Monday after 61 days, it will be
    a) Wednesday
    b) Saturday
    c) Tuesday
    d) Thursday
2. A man bought a number of clips at 3 for a rupee and an equal number at 2 for a rupee at what price per dozen should he sell them to make a profit of 20%
    a) Rs.4
    b) Rs.5
    c) Rs.6
    d) Rs.7
3. A mixture contains alcohol and water in a ratio 4:3 if 5lit of water is added to the mixture, the ratio becomes 4:5.Find the quantity of alcohol in the given mixture.
    a) 15 lit
    b) 10 lit
    c) 40 lit
    d) 22 lit
4. Two pipes A and B can fill a tank in 24 min & 32 min respectively. If both the pipes are opened simultaneously after how much time B should be closed so that the tank is fill in 18 min.
    a) 7 min
    b) 12 min
    c) 8 min
    d) 4min
5. The speed of a boat in water is 65km/hr and the rate of current is 3km/hr.the distance traveled down stream in 12 min is.
    a) 1.2 min
    b) 1.8 min
    c) 2.4 min
    d) 3.6min

6. The two trains are moving in opposite direction @ 60 km/hr & 90 km/hr. Their length are 1.10 km& 0.9 km respectively the time taken by the slower train to cross the faster train in seconds is
    a) 36
    b) 45
    c) 48
    d) 49
7. If simple interest on a sum of money at 5% per annum for 3yrs is Rs1200.Find the compound interest on the sum for the period at the same rate.
    a) 1202
    b) 1260
    c) 1301
    d) 1261
8. 7, 26, 63, 124, 215, 342,?
    a) 391
    b) 421
    c) 481
    d) 511
9. Pointing towards a person in the photograph, Anjali said, “He is the only son of the father of my sisters brother”, how is that person related to Anjali?
    a) Mother
    b) Father
    c) Maternal uncle
    d) None of these
10. Rohan walks a distance of 3 km towards north, then turns to his left and walks for 2 km, he again turns left and walks for 3 km. At this point he turns to his left and walks for 3km.How many km is he from the start point.
    a) 1 km
    b) 2 km
    c) 3 km
    d) 5 km

By
Abeymon
Final Year (MEIEA)

COMPANIES

DYNALOG INDIA LTD
Kailash Vaibhav,'g' Wing,
Vikhroli Parksite,
B/h.Godrej Colony,
Mumbai- 400079. India.
Web: www.dynalogindia.com

TELETHERM INSTRUMENT CO PVT LTD
Vision Tower,
Plot 15/16/, Yogam Gardens,
Brindavan, Valsarvakkam,
Chennai - 600087. India.
Web: www.visapvtltd.com

PHOTO FIND

Who is he? Clue: He is a Nobel Prize winner

Note

- The Answers will be published in the next issue.
- The winners name and photo will also be published.
- Prices will also be awarded for correct answers.

You can send your Answers TO:

The Chief Editor,
Electronics and Instrumentation Dept,
Muthayammal Engineering College,
Rasipuram-637408.

By
V.Ramachandran
Final Year (MEIEA)

NEW PRODUCTS

Palm Phone

At some point, every cell phone user has joked that they should have their phone surgically implanted into their hand since it's virtually a permanent fixture. Now, that ideology has been made into a reality, and it's a concept that some will love, some will hate.

The Finger Touching Phone concept is a wearable gadget like no other. You'll always have your phone in the palm of your hand with this design that projects the buttons with holograms onto your palm. The number buttons are specifically projected onto the inside of your fingers so that they are separated by your knuckles.

The unique palm phone design is a concept only at this stage - but as the next best thing to surgical implantation of your phone to your palm - I'm guessing, there's many hoping it goes beyond the prototype stage!

The water-powered clock

It doesn't need batteries, solar panels or winding, it just needs water. The Water Powered Clock sounds like something out of mythology, but it's real and it's turning H_2O into energy somewhere near you.

All you have to do to keep the clock ticking is change the water every six months. It uses "the latest electrochemical technology" to power the digital display with water and there are no emissions or waste. Shaped like cans, the clocks are available in four colors.

Powermat: a revolution in gadget charging

No more tangled mess of cords or searching for the right adaptor. Just put your enabled device on the Powermat to charge. A wireless charging station for your gadgets, it can charge multiple devices simultaneously and eliminate the tangle of wires that accumulate in the home and behind workstations.

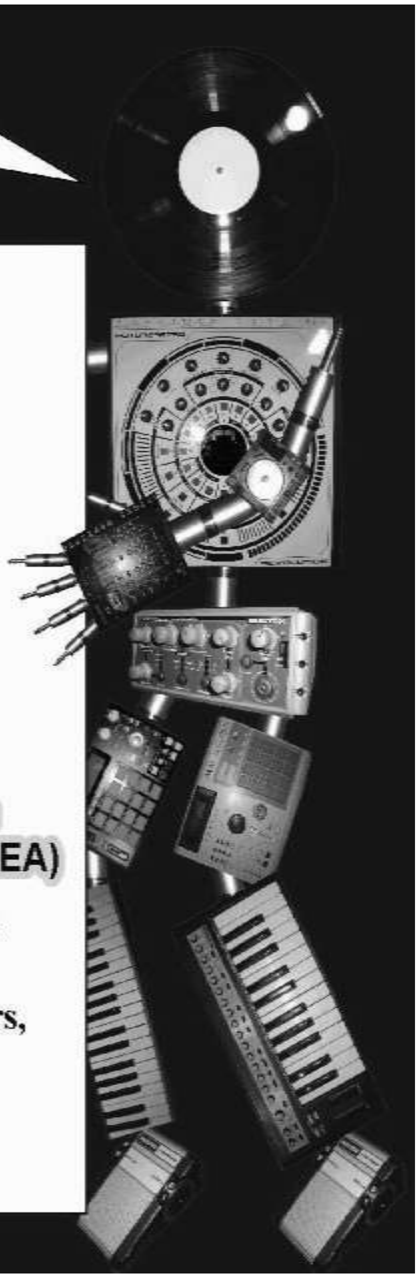
The real beauty of this slimline energy giver is that it banishes the need for up to twelve chargers, frees up desk space and stops your home looking like your local electronics store. By using principles of magnetic induction combined with Powermat's proprietary patent-pending technology, Powermat transforms surfaces including walls, tables, floors and desktops into safe, simple, and efficient conductors of energy.

By

K.Vellaiswamy

Final Year (MEIEA)

CONGRATS



ANSWERS

Aptitude

1) 27
2) $(x/3)+(x/4)+(x/5)=47/60$
   $(20x+15x+12x)/60=47/60$
   $x=1$
3) Sunday
4) $3x+3=2y-4$
   $x+y=11$
   $3x-2y=-7$
   $y=8, x=3$

Technical Question

M.Gowtham
Final Year (EIEA)

1.cause they provide same o/p for particular i/p,
2. Ø α I^2, 3.High R in series, 4.CE config,
5.IR LEDs, 6.Twisting force, 7.22 transistors,
8.Thermister or optical pyrometers, 9.Stable indication of pointer,10.Insulation testing