



*VEDA*

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UNDER THE AEGIS OF VEDA....

# XTRONICS

*The Monthly Technical Magazine..*



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## Scientist of the MONTH

### Joseph Henry

Joseph Henry (b. Albany, NY, USA, 17th December 1797, d. Washington, USA, 13th May 1878) was a pioneer in the field of electromagnetism. The SI unit of inductance was named after him as the Henry (H). He was born to a poor family of Scottish descent and raised as a Presbyterian, a faith he followed throughout his life. His elementary education was in Albany and Galway, New York, where he stayed with relatives. Henry was apprenticed to an Albany watchmaker and silversmith. The theater was his principal interest as an adolescent, until a chance reading of George Gregory's Popular Lectures on Experimental Philosophy, Astronomy, and chemistry turned him to science. In 1819 he enrolled in the Albany Academy and remained there until 1822, with a year off to teach in a rural school in order to support himself. He did odd surviving jobs while he was doing his scientific research. In 1825, Henry was appointed professor of mathematics and natural philosophy at the Albany Academy. In 1832, he accepted a chair at the College of New Jersey.

Henry discovered self-inductance following some experiments. He also conducted investigations on capillarity, phosphorescence, heat, colour blindness and the relative radiation of solar spots with skill and imagination. His 1835 paper was on the action of a spiral conductor in increasing the intensity of galvanic currents.

## Solutions

### Riddles

1. A teapot
2. A reflection.
3. Wholesome.
4. ImportANT.
5. A sponge.

### Aptitude

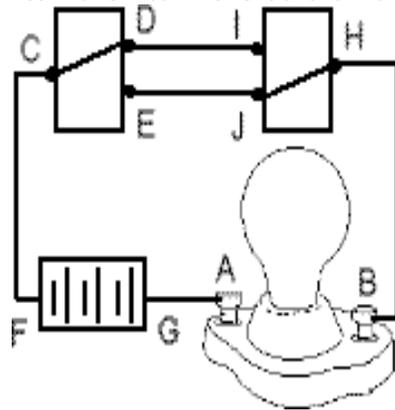
1. D
2. D
3. C
4. A
5. C

## Solutions Puzzles

1. The question that you ask has to involve both guards at the same time:

**"Would the other guard say that you are guarding the path to enlightenment?"**

2. Terminal **D** must connect to terminal **I**, and terminal **E** must connect to terminal **J**. **D** to **J** and **E** to **I** will also work. The light bulb and the power source must be connected in series, **A** to **G**, for example. Terminal **F** then connects to **C** and terminal **B** connects to **H**. **F** to **H** and **B** to **C** will also work. Either switch can then turn the bulb on or off.



He conceived of astronomy as the model science and mechanics as the ultimate analytical tool. Henry could not accept Faraday's field concept because of his belief in central forces acting in a universal fluid.

Henry formed the Smithsonian Committee, consisting of dedicated men forming internationally recognized standards and engaging in free and harmonious intellectual intercourse among themselves. Being the secretary of the Smithsonian, he was not interested in popularizing science but with supporting research and disseminating findings.

### What Did Joseph Henry Invent?

Joseph Henry independently discovered electromagnetic self-induction in 1831, however the credit goes to Michael Faraday for being first. Henry is also credited with the invention of an electric motor, however, again not the first. In 1830, Joseph Henry, demonstrated the potential of a William Sturgeon device for long distance communication by sending an electronic current over one mile of wire to activate an electromagnet which caused a bell to strike. Thus the electric telegraph was born, however, other inventors made a commercial success of that invention.

Joseph Henry's pioneering work in electricity and magnetism helped bring about the invention of the telegraph, the electric motor, and the telephone. "But for Joseph Henry, I would never have gone ahead with the telephone." - Alexander Graham Bell

*B Revanth Kumar, 3<sup>rd</sup> ECE-A*

## Company profiles

### Texas Instruments

Type	Public (NYSE: TXN)
Industry	Semiconductors, Electronics
Founded	1930 (as GSI), 1947 (as TI)[1]
Headquarters	Dallas, Texas, United States
Key people	Rich Templeton, President & CEO Kevin March, CFO Brian Bonner, CIO
Products	Integrated Circuits, Analog, Digital, Signal Processors , RFID, Calculators
Revenue	US\$10.43 billion (2009)
income	US\$2.00 billion (2009)
Net income	US\$1.47 billion (2009)
Total assets	US\$1.182 billion (2009)
Total equity	US\$9.722 billion (2009)
Employees	27,100 (2010)
Website	<a href="http://www.ti.com">www.ti.com</a>

Texas Instruments was founded by Cecil H. Green, J. Erik Jonsson, Eugene McDermott, and Patrick E. Haggerty in 1947. It was set up by its parent company Geophysical Service Incorporated (GSI) to manufacture the newly invented transistor. McDermott was one of the original founders of Geophysical Service in 1930. McDermott, Green, and Jonsson were GSI employees who purchased the company in 1941 on the day before Pearl Harbor was attacked. In November, 1945, Patrick Haggerty was hired as general manager of the Laboratory and Manufacturing (L&M) division. By 1951, the L&M division, with its defense contracts, was growing faster than GSI's Geophysical division.

*S Nagavalli, 2<sup>nd</sup> ECE-A*

## MATHS TRICKS:

### 1.TO CALCULATE REMAINDER ON DIVIDING THE NUMBER BY 7,11,13

consider number 34568276, we have to calculate the remainder on diving this number by 7, 11, 13 respectively.

make triplets as written below starting from units place

34.....568.....276

now alternate sum =  $34+276 = 310$  and  $568$

and difference of these sums =  $568-310 = 258$

divide it by 7 we get remainder as 6

divide it by 11 we get remainder as 5

divide it by 13 we get remainder as 11

### 2.Multiplication of 125 with any number (You can't use this rule for other numbers)

Consider the following examples

1.  $93*125 = 93000/8 = 11625.$

2.  $137*125 = 137000/8 = 17125.$

### 3.Multiplication of 99 with any number (You can't use this rule for other numbers)

Consider the following examples

1.  $46*99 = 46*(100-1) = 46*100-46 = 4600-46 = 4554.$

2.  $362*99 = 362*(100-1) = 36200-362 = 35838.$

*G Akhila, 4<sup>th</sup> ECE-B*

## **Tounge twisters:**

\*I wish to wish the wish you wish to wish, but if you wish the wish the witch wishes, I won't wish the wish you wish to wish.

\*Luke Luck likes lakes.

Luke's duck likes lakes.

Luke Luck licks lakes.

Luck's duck licks lakes.

Duck takes licks in lakes Luke Luck likes.

Luke Luck takes licks in lakes duck likes

\*If Pickford's packers packed a packet of crisps would the packet of crisps that Pickford's packers packed survive for two and a half years?

\*How many cookies could a good cook cook If a good cook could cook cookies? A good cook could cook as much cookies as a good cook who could cook cookies.

\*Through three cheese trees three free fleas flew.

While these fleas flew, freezy breeze blew.

Freezy breeze made these three trees freeze.

Freezy trees made these trees' cheese freeze.

That's what made these three free fleas sneeze.

*Ch Sreekanth, 4<sup>th</sup> ECE-A*

## **Technical Zone**

### **GORILLA GLASS**

Based on comprehensive understanding on how glass breaks, Corning created Gorilla Glass to better survive the real world events that commonly cause glass failure. Designed specifically for mobile devices, Corning's Gorilla Glass improves screen durability without adding weight to the highly mobile tablet PCs. Corning Gorilla Glass is an environmentally friendly alkali-aluminosilicate thin-sheet glass designed specifically to function as a cover glass for portable display devices. Its superior composition allows a deeper layer of chemical strengthening than is possible with other chemically strengthened glasses, giving it an increased ability to resist and withstand damage.

### **Gorilla Glass Features**

A variety of features come together in Corning's Gorilla Glass to create a strong, damage-resistant glass that is ideal for tablet PCs, including:

- Chemically strengthened to withstand high-volume user interaction and repetitive motion
- Highly durable cover glass for increased mobile Tablet PCs lifespan
- Adds protection without impacting pen response
- Increased ability to resist and withstand damages compared to device without Gorilla Glass

*T Chandra Sekhar, 2<sup>nd</sup> ECE-B*

## Laser device Thermometer

The infrared laser thermometer measures the electromagnetic radiation coming from an object or surface. These thermometers are used not only in industrial situations, but also in hospitals and doctor's surgeries. From the medical point of view they are more efficient and certainly more hygienic.

In technical terms the molecules of matter are continually moving, and as the temperature of such substances increases so does the intensity of the motion of the molecules.

The thermometer measures the infrared radiation by measuring how quickly the molecules are moving. The micro chip then calculates the surface temperature of the subject. This detail is then shown in digital form on the display screen of the thermometer. The entire method takes about 7 seconds, along with the information gained is invaluable to the user.

The industrial uses of the laser thermometer are endless. Whereas it was a time consuming and often a dangerous task to calculate heat emanating from objects, it can now all be achieved in a matter of seconds, and from a safe distance where necessary. Objects whether moving or stationary, inside or out, easy to access or hidden, are no longer a problem for the professional.

*S Bhagya Jyothi, 2<sup>nd</sup> ECE-C*

## Aptitude

1. In a group of 6 boys and 4 girls, four children are to be selected. In how many different ways can they be selected such that at least one boy should be there?  
(a.)159 (b.)194 (c.)205 (d.)209
2. How many kilogram of sugar costing Rs. 9 per kg must be mixed with 27 kg of sugar costing Rs. 7 per kg so that there may be a gain of 10% by selling the mixture at Rs. 9.24 per kg?  
(a.)36 (b.)42 (c.)54 (d.)63
3. A and B started a partnership business investing some amount in the ratio of 3: 5. C joined then after six months with an amount equal to that of B. In what proportion should the profit at the end of one year be distributed among A, B and C?  
(a.)3:5:2 (b.)3:5:5 (c.)6:10:5 (d.)none
4. What is the least number of squares tiles required to pave the floor of a room 15 m 17 cm long and 9 m 2 cm broad?  
(a.)814 (b.)820 (c.)840 (d.)844
5. On 8th Feb, 2005 it was Tuesday. What was the day of the week on 8th Feb, 2004?  
(a.)Tuesday (b.)Monday(c.)Sunday (d.) Wednesday

*M Hari Krishna, 3<sup>rd</sup> ECE-B*

## RIDDLES

- 1) What starts with a T, ends with a T, and has "T" in it?
- 2) You saw me where I never was and where I could not be. And yet within that very place, my face you often see.  
What am I?
- 3) What is it that after you take away the whole, some still remains?
- 4) There once was a strange man who loved wordplay, he had a very important and successful business that would take insect shipments from all across the world and distribute them to zoos across the US.

What was the name of his company?

- 5) I'm full of holes, yet I'm full of water. What am I?

*D Rahul, 4<sup>th</sup> ECE-B*

## Wall Climbing Robot

Robotics makes interesting gadgets and new inventions. This new tech gadget is no exception because it can actually climb walls.

The robot named ROCR (pronounced "rocker") is an oscillating climbing robot that mimics the motion of human rock climbers and combines it with the motion of apes swinging through trees.

Details of this new tech gadget were published in the journal of Transactions and Mechantronics.



### How It Works

The upper body has two steel hand-claws that grip a wall and a tail that swings.

As the tail swings the from side to side the hand-claws reach up, one hand at a time, pulling the body upwards.

When the tail swings it causes a shift in the center of gravity that raises the robots free hand, which then grips the climbing surface.

The ROCR is powered by four 9-volt batteries that are attached to the tail.

"It mimics a gibbon swinging through the trees and a grandfather clock's pendulum, both of which are extremely efficient," says inventor William Provancher, an assistant professor of mechanical engineering at the University of Utah.

### Future Use



There are gadgets and new inventions used for inspection, surveillance and even maintenance but Provancher believes the ROCR is a better alternative.

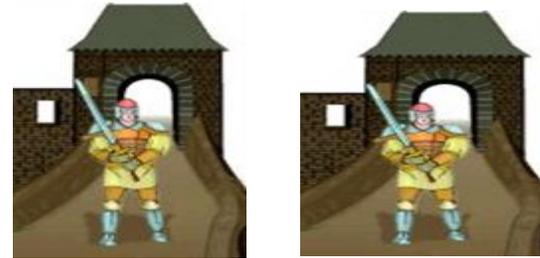
"Climbing robots have focused on issues such as speed, adhering to the wall, and deciding how and where to move, but ROCR is the first to focus on climbing efficiently," says Provancher.

Sensors and cameras could be mounted on the robot to provide live feeds of inspections. It could look for things like failures in the concrete on dams, buildings and bridges.

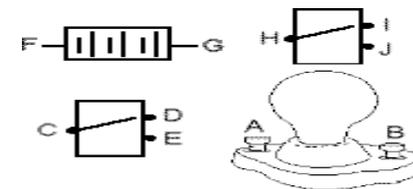
*G Navya, 3<sup>rd</sup> ECE-A*

## Puzzles

**Qs.1** The path to enlightenment lies behind one of two doors. In front of each door stands a guard who knows which door leads to enlightenment, but one of the guards always lies and the other one always tells the truth. In your search for enlightenment, you are allowed to ask one guard only one question that can be answered "yes" or "no", but unfortunately, you do not know which guard is the liar. You will be banished to the dungeon of logical illiteracy if you fail in your quest. What question should you ask to find the path to enlightenment?



**Qs.2** An electrician has two two-way switches (single-pole, double-throw), a light bulb, and a power source. How should he connect the terminals so that either switch can be used to turn the light on or off?



*M Sushma Priya, 2<sup>nd</sup> ECE-A*