- Science & Technology

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- TECHNOLOGY

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Ku-band. K-under

- The Ku band is the portion of the electromagnetic spectrum in the microwave range of frequencies from 12 to 18 GHz.
- Wavelength 2.5-1.67 cm
- A microwave frequency band used for satellite communication and broadcasting, using frequencies of about 12 GHz. for terrestrial reception and 14 GHz for transmission.

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Chandrayaan-1

- Chandrayan-1 was India's first lunar probe. It was launched by the Indian Space Research Organization in October 2008, and operated until August 2009. The mission included a lunar orbiter and an impactor. India launched the spacecraft using a PSLV-XL rocket, serial number C11, on 22 October 2008 at 00:52 UTC from Satish Dhawan Space Centre about 80 km north of Chennai. The vehicle was inserted into lunar orbit on November 8, 2008.

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Android Software

- Android means possessing human features
- First was Android beta in November 5 2007. Android 1.0 was released in September 2008 Developed by Google and Open Handset Alliance
- After 1.1 version Android code names of confectionery-themed and have been in alphabetic order since 2009.
- Cupcake, Donut, Éclair, Foryo, Gingerbread, Honeycomb, Icecream sandwich, Jelly bean, Kitkat, Lollipop, Marsmallow, Nougat, Oreo (Version 8) August 21, 2017, Pie and Android Q.

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Graphene

- Graphene is obtained from Graphite. Graphene is stronger than steel, conducts electricity better than copper and is so light and flexible.
- Graphene was discovered in 2004 by two British scientists who used Scotch tape to extract atom thin layers of pure carbon from flakes of graphite.
- Market for Graphene is emerging fast.
- It can have commercial uses from batteries and touch screens to smart clothing and building material.
- Grapheme can conduct electricity even in strands one atom thick. Using it in lithium ion batteries could significantly increase the charging capacity and power life.
- That in turn would make more viable electronics of every kind from Apple's I phones to Tesla's electric cars.

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3-D Printing

- 3D printing is any of various processes in which material is joined or solidified under computer control to create a three-dimensional object, with material being added together (such as liquid molecules or powder grains being fused together).3D printing has been used in manufacturing, medical & industry. 3D printing is now also used for creating clothing, shoes and eye wear too.

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Vantablack

- Vantablack is a substance made of carbon nanotubes and is the blackest substance known, absorbing up to 99.965% of radiation in the visible spectrum.
- The name comes from the term “Vertically Aligned Nano Tube Arrays” (VANTA) .
- Vantablack is composed of a forest of vertical tubes which are grown . When light strikes vantablack, instead of bouncing off , it becomes trapped and is continually deflected among the tubes, eventually becoming absorbed and dissipating into heat.
- Substance has potential applications, including preventing stray light from entering telescopes, and improving the performance of infrared cameras both on Earth and space.

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Vantablack

- Vantablack may also increase absorption of heat in materials used in concentrated solar power technology, as well as military applications such as thermal camouflage.
- Exclusive rights of Vantablack for artistic use have been given to the artist ANISH KAPOOR.
- Anish Kapoor is a British –Indian Sculpture. He received a Knighthood in 2013.
- His works- Cloud Gate, Sky Mirror, Temenos, Grand Palais and Arcelor Mittal Orbit

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Aspect Ratio in TV Picture

- aspect ratio is the proportion between the width and height of an image, screen or video display.
- Aspect ratio is generally used to define graphic screen sizes for display resolutions.

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CRT LCD LED Monitors

- CRT: is the Cathode Ray Tube. It is a vacuum tube. It contains one or more electron guns. The tube has a phosphorescent screen which is used to display image. Electron beam is targeted towards the screen to create the images
- LED: 'Light-Emitting Diode': it is two-lead semiconductor light source. The diode emits light when activated. Electrons gets recombined releasing energy in the form of photons.

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LCD Monitors

- LCD: 'Liquid Crystal Display' is the technology used for displays in notebook and other smaller computers. LCDs allow displays to be much thinner than Cathode Ray Tube.
- LCD consumes much less power than LED as they work on the principle of blocking light rather than emitting it. LCD also known as TFT (Thin Film Transistor)

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IP Address

- An IP address (abbreviation of internet protocol address) is an identifier assigned to each computer and other devices (e.g. printers, router, mobile device etc.) connected to a TCP/IP network is used to locate and identify the node in communications with other nodes on the network.

- FORMAT OF IP ADDRESS:

  The format of an IP address is a 32 bit numeric address written as four numbers separated by periods. Each number can be zero to 255. With in an isolated network, you can assign IP addresses at random as long as each one is unique.

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Genetic Engineering

- Genetic engineering, also called genetic modification or genetic manipulation is the direct manipulation of an organism's genes using biotechnology.
- CLONING - one of the most controversial uses of genetic engineering has been cloning or producing a genetically identical copy of an organism. Ethics of cloning are hotly debated.
- The first ever sheep named Dolly was cloned in 1996 by scientists.
- With genetic engineering we can change the genetic makeup of cells and add one or more new traits that are not found in that organism.

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Driverless car

- A driverless car is a vehicle that is capable of sensing its environment and navigating without human input.
- The car combine a variety of techniques to perceive their surroundings, including radar, laser lights, GPS, odometry (Odometry is the use of data from motion sensors to estimate change in position over time) and computer vision.

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5G

- G stands for Generations. Each generation is supposedly faster, more secure and more reliable.

  1G was not used to identify wireless technology
  2G Wireless network went from analog to digital.
  3G Faster data transfer speed. At least 200KB per sec
  4G /LTE (Long Term Evolution) Transfer rate upwards of 1Gps
  5G- will be rolled out 2020. Speed expected 1-10 Gbps

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104 Satellites

- India's ISRO launched 104 satellites from single rocket. On 15th Feb 2017.
- On board was a 714 kg satellite for earth observation and more than 100 smaller satellites weighing less than 10kg each.
- Rocket PSLV-C37 was used.

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Hyperloop

- Hyperloop is a proposed mode of passenger and freight transportation.
- A Hyperloop stated to be a sealed tube or system of tubes through which a pod may travel free of air resistance or friction conveying people or objects at a high speed.
- The speed likely to be achieved is 760mph (1200km/h) faster than air and rail travel.

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Ka band "Kurz-above". Kurz means short in German

- Frequency range 26 to 40 GHz
- In satellite communications, the Ka band allows higher bandwidth communication
- Ka band is used in the Inmarset satellites
- The Ka band is more susceptible to rain attenuation.
- The 5th generation mobile networks will overlap with Ka band.

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Genetic Engineering

- Genetic engineering is used by scientists to enhance or modify the characteristics of an individual organism. For example, genetic engineering can be used to produce plants that have a higher nutritional value or can tolerate exposure to herbicides.

- Examples:
  Golden Rice- Genetic modification is often used to make "healthier" foods, such as golden rice, which contains beta-carotene – the very same vitamin that makes carrot orange. The result is that people without access to many vitamins will get a healthy dose of vitamin A when rice is consumed.

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Biotechnology

- Biotechnology deals with techniques of using live organisms or enzymes from organisms to produce products and processes useful to human.
- In vitro fertilization leading to a 'test-tube' baby, synthesizing a gene and using it, developing a DNA vaccine or correcting a defective gene are all part of biotechnology
- Genetic engineering - Techniques to alter the chemistry of genetic material (DNA RNA) to introduce these in to host organisms and thus change the phenotype of the host organism.

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Mission to Mars

- Mariner 9 was launched successfully on May 30, 1971, and became the first artificial satellite of Mars when it arrived and went into orbit.
- Viking Project was the first mission to land a spacecraft safely on the surface of another planet in 1976.
- Mars Pathfinder landed successfully on Mars on 1997 July 4.

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Mission to Moon

- Six missions landed men on the Moon, beginning with Apollo 11 in July 1969, during which Neil Armstrong became the first man to walk on the Moon.

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Earthquake

- An earthquake is the shaking of the surface of the earth, resulting from the sudden release of energy in the Earth's lithosphere that creates seismic waves.
- The lithosphere of the earth is divided into a small number of plates which float on and travel independently over the mantle and much of the earth's seismic activity occurs at the boundaries of these plates.
- Epicenter: The epicenter is the Earth's surface directly above the focus, the point where an earthquake or an underground explosion originates.
  Earthquakes are caused mostly by rupture of geological faults.
- The first scale for measuring earthquake magnitudes was developed by F Richter in 1935.

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Earthquake

- It is estimated that around 5Lakh earthquakes occur each year.
- About 1 lakh of these can be felt.
  Larger earthquakes occur less frequently.
- Most of the world's earthquakes over 90% take place in 40,000 km long, horseshoe-shaped zone called the circum-Pacific seismic belt, known as the Pacific Ring of Fire,
  HIMALAYAN mountain range was formed as a result of the collision of Indo-Australian plate and Eurasian plate.
- According to tectonic plate theory, Indo Australian plate (on which India is existing) is moving towards north and is subducting under Eurasian plate.
- This movement causes friction between the two plates. Because of the friction lot of energy is released which causes earthquakes.

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- Thank You