www.amkresourceinfo.com

Science One Liners – Part 2

Physics & Chemistry

1. Energy
2. Hydrocarbons
3. Synthetic Materials
4. Soaps and Detergents
5. Sound
6. Heat
7. Light
8. Universe

More than 1500⁺ One Liners

ENERGY

- The radiations that causes skin burns are UV rays

- The entire reactor is enclosed in a concrete shield building with Lead sheets covered inside to prevent radiations being released in the environment

- During nuclear reactions the sum of the masses of the product particles is lesser than the sum of the masses of reactant particles

- $_{92}U^{235} + _0n^1 \text{------------} _{56}Ba^{141} + _{36}Kr^{92} + 3_0n^1$

- $_{92}U^{235} + _0n^1 \text{------------} _{54}Xe^{139} + _{38}Sr^{95} + 2_0n^1$

- $_{92}U^{235} + _0n^1 \text{----------} _{57}La^{153} + _{35}Br^{81} + 2_0n^1 + \text{energy}$

- 1gm of uranium 235 releases $8.5 \times 10^{10}J$ of energy during Nuclear fission

- A self sustained fusion reaction is called Chain reaction

- If the built up fission neutron is kept constant then it is a controlled Chain reaction
- The radiant energy we receive from the sun in the form of Light and Heat is Solar energy
- A device which cook food using the solar energy is called Solar Cooker
- A device which converts solar energy into electrical energy is called Solar Cell
- A device which heats the water using solar energy is called Solar Water Heater
- A panel consisting of large number of solar cells connected together in form of series Solar Panel
- The technique that helped to determine the composition of the sun is Spectrum Analysis
- The main component of sun is Hydrogen
- The fuels formed from the remains of animals and plants which were buried in the earth millions year ago is called Fossil fuel
- The devices that are used to harness solar energy are called Solar devices
- The converter that convert solar energy into heat are called Thermal converters
- The converter that converts solar energy into electrical energy is called Photovoltaic converter
- The first solar cell was fabricated in 1954
- The copper tubes are used in solar water heater to increase the area of absorption of heat
- The scientists who gave the correct explanation for the source of energy of sun Were Hans Bethe and C.Von Weisacker
- The type of reflector used in box type solar cooker is Plane reflector
- The semiconductor material used in solar cell is silicon
- The voltage produced by the single solar cell is about 0.5volt
- The type of energy possessed by the wind is Kinetic energy
- The component of solar radiation that heats up the material is Infrared radiations
- The energy of the sun is due to nuclear fusion
- The two kinds of nuclear reactions responsible for the energy of the sun are Proton-Proton cycle and Carbon cycle
- In carbon cycle taking place in sun, the carbon acts as a catalyst for the fusion of hydrogen nuclei
- The device used to make the radiations fall directly on the solar cooker is Plane mirror
- The inner surface of the solar cooker is coated black because to ensure the better absorption of heat

- The power produced by the single solar cell is about 0.7Watt
- Solar cooker traps Infrared radiations
- The function of glass plate in the solar cooker is to trap the infrared radiations
- Bending copper pipes helps to increase the area of absorption of solar energy
- The main field of use of solar panels is in Artificial satellites
- Heat from the sun reaches us in the form of infrared radiations
- Light from the sun reaches us in the form of Visible light
- The one of the use of solar cells is to light the street lights and Traffic signals
- The part of the solar cooker that reflects the radiations is Plane mirror
- The main disadvantage of solar devices is Low efficiency
- During proton-proton chain reaction two nuclei fuse into one helium
- The color used in painting the inside surface of the solar devices like solar cooker is Black
- Solar devices are classified into different types based on their principle of working
- We receive the solar energy in the form of Heat and Light
- The energy radiated by the sun per second is 4×10^{26} J/s
- The type of the mirrors used in solar water heater are concave or Parabolic
- The concave mirrors are used in solar water heater because to absorb more radiations in small area
- The form of energy used to run the traditional boats is Wind Energy
- The natural transformation of solar energy that is fast depleting is Energy in fossil fuels
- The natural transformation of solar energy that supports life on earth is Energy in Food
- According to Bethe, hydrogen nuclei form to provide Helium nuclei is the source of solar energy
- In typical solar cell, the material that absorbs light energy is made up of Silicon
- The solar device used in traffic lights is Solar Cell
- An example of solar device that converts light energy into electrical energy is Solar cell
- An example of a solar device that directly absorbs heat is Solar cooker
- The solar cells are made up of semi conductors silicon and Germanium
- The capacity to do work is called Energy
- The SI unit of energy is Joule
- 1 Calorie is equal to 4.18 Joules

- The energy sources that do not depleted on their continuous use are called <u>Renewable sources</u>

- The energy sources that get depleted on their continuous use are called <u>non Renewable sources</u>

- The perennial source of energy is <u>Solar Energy</u>

- The situation arising out of energy demand for exceeding its supply is called <u>Energy Crisis</u>

- The type of lights which are more energy efficient are <u>fluorescent Lamps</u>

- The transmission loss of electrical energy in our country is about <u>20 to 40%</u>

- A bio waste material is <u>Animal dung</u>

- The device which gives biogas from biomass is called <u>Biogas Plant</u>

- The energy consumed in India as a percentage of the total energy consumption of the world is <u>3%</u>

- The acute shortage of energy due to ever increasing demand is called <u>Energy Crisis</u>

- To avert energy crisis we must encourage the <u>use of mass transport system</u>

- To avert energy crisis we must use <u>renewable source of energy</u>

- According to the estimation our coal reserves may last about <u>200 to 300 years</u>

- The problem created due to the fear of running out of earth's energy resources is <u>Energy Crisis</u>

- The most important factor responsible for the energy crisis is <u>Population Explosion</u>

- The amount of energy consumed by a single person is called <u>Per capita energy consumption</u>

- The trend of consumption of energy is more in the period 1995-2010 in <u>Industrialized countries</u>

- An example for non renewable source of energy is <u>Natural gas</u>

- An example for renewable source of energy is <u>wind</u>

- The main cause for wastage of energy is <u>Luxurious way of living</u>

- The source of energy which is depleting is <u>Petroleum</u>

- America and Russia together consume about <u>50%</u> of the total energy of the world

- Largest producers of the energy in the world are <u>Developed countries</u>

- The good indicator for the living standard of the people is <u>consumption of energy</u>

- India has a population of <u>about 1/6</u>[th] the world population

- The wastage of energy is due to <u>improper use of energy resources</u>

- A suitable measure for saving fuel is improving the quality of roads
- The reason fro high consumption of electricity is Luxurious living standard
- A good solution for the energy crisis is higher use of solar energy
- Gobar gas is produced using the biowaste materials and animal dung
- The main effect of bad condition of roads is Increased fuel consumption
- The incandescent bulb compared to fluorescent bulb has low efficiency

HYDROCARBONS

- The compounds of carbon with hydrogen are called Hydrocarbons
- The ability of carbon atom to have covalent links with its own atoms forming a chain is called Catenation
- Hydrocarbons whose molecules have an open chain structure are called Aliphatic hydrocarbons
- Hydrocarbons whose molecules have only single bonds between their carbon atoms are called Saturated hydrocarbons
- Hydrocarbons whose molecules have double or triple bond between their carbon atoms are called Unsaturated hydrocarbons
- The Aliphatic hydrocarbons whose molecules have single bonds between their carbon atoms are called Alkanes
- The Aliphatic hydrocarbons whose molecules have double bonds between their carbon atoms are called Alkenes
- The Aliphatic hydrocarbons whose molecules have triple bond between their carbon atoms are called Alkynes
- The organic compounds having the same molecular formula but different molecular structure are called Isomers
- The existence of two or more different organic compounds with the same molecular formula but different structure is called Isomerism
- The process of separating various fractions of petroleum is called Refining of petroleum
- The chemical substance obtained from petroleum or natural gas are called Petrochemicals
- The branch of chemistry which deals with the study of compounds of carbon is called Organic chemistry
- The atomic number of carbon is 6
- The electronic configuration of carbon is $1s^2 2s^2 2p^2$
- The simplest hydrocarbon is Methane
- The molecular formula of Methane is CH_4

- The formula of a compound which shows not only the atoms present in its molecule but also gives an indication of its structure is called Structural Formula
- The molecular formula of Ethane is C_2H_6
- The molecular formula of Ethene is C_2H_4
- The molecular formula of Acetylene is C_2H_2
- The molecular formula of Pentane is C_5H_{12}
- The molecular formula of Hexane is C_6H_{14}
- The molecular formula of Heptane is C_7H_{16}
- The molecular formula of Nonane is C_9H_{20}
- The molecular formula of Decane is $C_{10}H_{22}$
- The general formula of Alkanes is C_nH_{2n+2}
- The general formula of Alkene is C_nH_{2n}
- The general formula of Alkyne is C_nH_{2n-2}
- Alkanes are paraffin's because they have little affinity for chemical reactions
- The molecular formula of Propane is C_3H_8
- The molecular formula of Butane is C_4H_{10}
- The molecular formula of Propene is C_3H_6
- The molecular formula of Butene is C_4H_8
- The molecular formula of Propyne is C_3H_4
- The molecular formula of Butyne is C_4H_6
- The hydrocarbons containing a closed ring of carbon atoms in their molecule are called Carbocyclic hydrocarbons
- The general formula of carbocyclic hydrocarbons is C_nH_{2n}
- The hydrocarbons in which the carbon chain forms the ring and there is a single bond between the carbon atoms is called Alicyclic hydrocarbons
- The molecular formula of Cyclopropane is C_3H_6
- The molecular formula of Cyclohexane is C_6H_{12}
- The hydrocarbons whose molecules contain a hexagonal ring structure of the benzene type are called Aromatic hydrocarbons
- The molecular formula of Benzene is C_6H_6
- The molecular formula of Toluene is $C_6H_5CH_3$
- The dark brown liquid which occurs at various depths below the surface of earth under the rocks is called Petroleum
- The process of decomposing higher hydrocarbons of petroleum fraction into lower hydrocarbons with boiling points by strong heating is called Thermal cracking or Pyrolysis
- CNG stands for Compressed Natural Gas

- The chief constituent of petroleum gas is Butane
- The chief constituent of natural gas is Methane
- LPG stands for Liquid Petroleum Gas
- LPG is called as efficient fuel because it has high calorific value
- The gases liberated during combustion are called Exhaust gases
- The test conducted to determine the percentage of carbon monoxide released by an automobile is called Emission test
- The alkene that contains four carbon atoms in its molecule is Butene
- The alkyne that contains five carbon atoms in its molecule is Pentyne
- The simplest aromatic hydrocarbon is Benzene
- A toluene derivative which is used as an explosive is TNT
- TNT stands for Trinitrotoluene
- The most poisonous gas present in the automobile exhaust is Carbon monoxide
- The smelling agent added to LPG to facilitate quick detection of leakage is Ethyl Mercaptan
- The two classes of hydrocarbons having the same general formula are Alkenes and Acyclic hydrocarbons
- The number of carbon atoms in the molecule of Ethane 2
- The chief constituent of LPG is Butane
- The process of cracking or higher hydrocarbons into shorter hydrocarbons is called Pyrolysis
- The thermal cracking of octane yields Hexane and Ethene
- The naturally occurring compounds like oil and fats are called Lipids
- In 2p level of carbon there are 2 unpaired electrons
- The first member of aromatic hydrocarbon is Benzene
- Benzene was first isolated by Michael Faraday
- The structure of Benzene was proposed by Kekule in 1865
- The instrument used to determine the amount of carbon moxide released is called Gas Analyzer
- The position of carbon in the periodic table is 2nd period and 14th group
- The molecular formula of normal butane and Isobutane is C_4H_{10}
- In normal state the valency of carbon is 2
- In excited state the valency of carbon is 4
- The acidic impurities present in the petroleum are removed by washing it with dilute H_2SO_4 and NaOH
- The temperature at which the petroleum cracking is done is $650^{0}C$
- The byproduct obtained during petroleum cracking is Alkenes

- The another name of Methane gas is Marsh gas
- The hydrocarbon used in the preparation of explosives is Toluene

SYNTHETIC MATERIALS

- The materials that are not available in nature but are prepared by humans by using naturally occurring raw materials is called Synthetic materials
- The compounds formed by the union of several molecules of a simple compound are called Polymers
- The plastics which lose their shape on heating are called Thermoplastics
- The plastics which set on heating and become irreversible hard on cooling are called Thermosetting plastics
- The method of hardening cement concrete structures by continuous treatment with water is called Curing
- The process of reducing the brittleness of the glass by slow cooling is called Annealining
- A substance formed by the chemical union of two or more elements combined in definite proportion by weight is called Chemical compound
- The bakelite is also called Thermosetting plastic because It cannot be hardened and softened the second time
- The synthetic material which is the mixture of calcium silicate, calcium aluminate with a small amount of gypsum is known as Cement
- The chemical name of gypsum is Calcium sulphate ($CaSO_4$ $2H_2O$)
- The amorphous, transparent synthetic material which is essentially the mixture of super cooled mixture of silicates is Glass
- The raw material used for making glass are sand, limestone and sodium carbonate
- The chemical composition of ordinary glass is homogenous mixture of Sodium silicate and Calcium silicate
- The amount of gypsum added to cement to prevent quick setting of cement is 3%
- The soda glass is the mixture of sodium silicate and calcium silicate
- The type of glass used to make laboratory wares is Borosilicate glass
- The lead glass is also known as Flint glass
- The type of glass used to make prisms, lenses and window panels in nuclear installations is Lead glass
- The metallic oxide added to give green color to the glass is Chromium oxide

- The metallic oxide added to give violet-red color to the glass is Manganese dioxide

- The metallic oxide added to give deep blue color to the glass is Cobalt oxide

- The metallic oxide added to give Red color to the glass is Cuprous oxide

- The glass used to make fire proof curtains, dresses and glass wool is Fiber glass

- The material used to prepare porcelain is White clay, Feldspar and Sand (quartz)

- The natural substance used for cleaning is Shikakai

- The two synthetic materials used for making fibres are Polyster and Terylene

- A simple compound whose molecule build up a polymer is called Monomer

- The polymer prepared from ehtene is Polyetnene

- The polymer commonly used to make gaskets and seals is Thiokol

- The polymer used to give coating to non stick cooking wares is Teflon

- The monomer used to prepare nylon is Carbolactum

- The monomer used to prepare Polyster is Esters

- The monomer used to prepare Poly vinyl chloride is Vinyl chloride

- The monomer used to prepare Teflon is Tetrafluroethene

- The monomer used to prepare Neoprene is Chloprene

- The monomer used to prepare Thiokol is Ethylene chloride and Sodium Polyhifide

- The polymer that is commonly used to make household articles is Plastic

- The chemical name of Soda ash is Sodium carbonate

- The type of glass used to make optical instruments is Lead glass

- The materials made of clay are commonly known as Ceramics

- The chemical name of limestone is Calcium carbonate

- An example of natural polymer is Cellulose and starch

- An example of thermoplastics is Polysterene

- An example of thermosetting plastic is Bakelite

- Gypsum is added to cement to control the setting rate of cement

- The process of second stage of setting of cement is Exothermic

- The raw materials used to manufacture glass are sand, limestone and sodium carbonate

- Glasses are imparted the desired color by adding a suitable metallic oxide

- An example of ceramic material is Chinaware, brick, Porcelain

- Porcelain materials are given glazing to plug the pores in the fired porcelain articles

- The chemicals commonly used for imparting glazing to porcelain articles are <u>Boron and Alumina</u>

- The type of glass used to manufacture wind shields of vehicles is <u>Safety glass</u>

- An example for naturally existing polymer is <u>Carbohydrates</u>

- The polymers prepared from unsaturated monomers are called <u>Additional polymers</u>

- The polymers obtained by condensation reaction between monomers are <u>Condensation Polymers</u>

- An example of condensation polymer is <u>Nylon</u>

- The process of using the material again by reprocessing is called <u>Recycling</u>

- The homogenous mixture of finely powdered ground clay and limestone is called <u>Slurry</u>

- Colloidal gel is the mixture of <u>Calcium silicate and aluminate of cement</u>

- The mixture of cement, gravel and sand in the ration 1:2:4 or 1:3:6 is called <u>Concrete</u>

- The chemical formula for Calcium silicate is <u>$CaSiO_3$</u>

- The chemical formula for Sodium silicate is <u>Na_2SiO_3</u>

- The chemical composition of Feldspar is <u>$K_2O \, Al_2O_3 \, 6 \, SiO_2$</u>

- The type of glass used to manufacture decorative materials is <u>Colored glass</u>

- The type of glass used in preparation of bottles, tumblers is <u>Soda glass</u>

- The special additive found in Borosilicate glass is <u>Boron</u>

- The special additive found in Soda glass is <u>Aluminum oxide</u>

- The word Ceramics means <u>Earthen pot</u>

- The homogenous mixture of finely powdered white clay, sand and feldspar is called <u>Slip</u>

- The pores of fine articles are plugged by <u>Glazing</u>

- The articles used as ornamental building material are <u>Terracotta articles</u>

- A process in which several molecules join together to form a giant molecule is called <u>Addition polymerization</u>

- Several monomers forms a polymer with the elimination of some simple molecules during the reaction <u>Condensation polymerization</u>

- The simple compound that builds up the polymers are called <u>Monomers</u>

- The type of polymer used in preparation of medical articles is <u>Neoprene</u>

- The characteristic property of lead glass is it is highly transparent and has high refractive index

- The characteristic property of Borosilicate glass is It withstands high temperature fluctuations
- The characteristic property of Soda glass is It fuses easily at relatively low temperature
- The characteristic property of Safety glass is it withstands high stress and sharp edges are not formed when braked
- The characteristic property of fiber glass is Light, strong and fire proof
- The type of polymer used to make parts of electrical devices is Tetrefluroethene
- The type of glass that has high absorption radiation is Lead glass
- The polymer used in the manufacture of irrigation pipes is Polyvinyl chloride
- The type of polymer used for making fibers, brushes, ropes is Nylon
- The type of polymer nearest to natural rubber used in household articles is Neoprene
- The type of polymer used in making bags, films is Polythene
- The process of hardening of cement with water is called Setting
- The temperature at which glass is manufactured is 1973K
- The articles prepared from slip is heated in a furnace at a temperature of 1873K
- Polymer used in synthetic fibres is polyester
- The polymer that is compound of our food is Vitamin
- Starch is formed by polymerization of glucose
- Handles of cooking vessels are made up of bakelite because it melts at high temperature
- Cement flooring is treated with water after it is laid to avoid cracking
- The porcelain is used in electric devices because it is an Insulator

SOAPS AND DETERGENTS

- The metallic salts of long chain fatty acids that have cleaning action in water are called Soaps
- The materials used in the preparation of soap is Vegetable oil, Sodium hydroxide and Sodium chloride
- The chemicals required to prepare Sodium oleate are Oleic acid and Sodium hydroxide
- The property of water which makes it an excellent solvent is Polar nature
- The process of preparation of soap using a vegetable oil or animal fat is called Saponification
- The two alkalies that are commonly used in the manufacture of Soap are Sodium hydroxide and Potassium hydroxide

- The molecular formula of Sodium stearate is $C_{17}H_{35}COONa$
- The molecular formula of Sodium Oleate is $C_{17}H_{33}COONa$
- The molecular formula of Sodium Palmitate is $C_{17}H_{31}COONa$
- Soft water gives lather with soap because it does not contain ions of either calcium or magnesium
- The common salt is added in preparation of soap to reduce solubility of soap and help in precipitation
- The detergents are preferred over soaps because they readily form lather in the scum
- The fatty acid from which sodium palmitate is prepared is Palmitic acid
- The byproduct of soap industry is Glycerol
- The chemical used to precipitate soap during saponification is Sodium chloride
- Detergents are called as Soap less soaps
- The cleaning agent that gives lather readily even in hard water is Detergent
- The chemicals required to prepare potassium oleate is Oleic acid and potassium hydroxide
- An example of long chain fatty acid is stearic acid
- An example of soap Sodium Stearate
- An example of a detergent is Sodium dodecyl sulphate
- The one of the disadvantage of detergent over soap is it pollutes water and soil
- The substance used to remove dirt are soaps and detergents
- The organic compounds containing a carboxyl (-COOH) group are called Fatty acids
- The fatty oils and fats are commonly called as Glyceryl esters or Glycerides
- The molecular formula of Paalmilic acid is $C_{17}H_{31}COOH$
- The molecular formula of Oleic acid is $C_{17}H_{33}COOH$
- The molecular formula of Stearic acid is $C_{17}H_{35}COOH$
- An example of inorganic salt is Sodium chloride
- An example of organic salt is Sodium stearate
- The chemical formula of Glycerol is $CH_2OH-CHOH-CH_2-OH$
- The sweet viscous liquid soluble in water is called Glycerol
- The process of preparation of soap was discovered by Carl Wilhelm sheel in 1783
- The addition of Sodium chloride reduces the solubility of soap
- The glycerol is separated from the solution by distillation

SOUND

- The sound of frequency greater than 20000Hz is called Ultrasonic sound
- A devise that uses the ultrasonic sound to determine the distance, speed and direction of underwater objects is SONAR
- SONAR stands for Sound Navigation and Ranging
- A instrument which uses the ultrasonic sound to display the images of the internal organs of the human body is called Ultrasonic Scanner
- The apparent change in frequency of wave motion due to relative motion between the source and observer is called Doppler effect
- The technique for recording the electrical activity of heart is called Electrocardiography
- ECG stands for Electrocardiography
- EEG stands for Electroencephalography
- The technique of using ultrasound to investigate the heart is called Echocardiography
- An instrument usually used by traffic inspectors to detect the speed limit of the vehicles is Radar Gun
- A periodic disturbance propagating through a medium carrying energy is called a Wave
- The relationship between the frequency f, wavelength λ and velocity V is given by the equation $V = f\lambda$
- The sound which can be heard by human ears is called Audible sound
- The frequency range of audible sound is 20Hz to 20000Hz
- The range of frequency of ultrasonic sound is from $20KHz$ to 5×10^5 KHz
- The range of wavelength of Ultrasonic sound is from 1.65cm to about 6×10^{-5}cm
- The branch of science that deals with the study of ultrasonic sound is called Ultrasonic
- The energy of a wave is proportional to its Frequency
- The ultrasonic sound has high frequency because their frequency is quite high
- The type of waves used in dry cleaning of clothes is Ultrasonic waves
- The type of waves used to treat neuralgic and rheumatic pains is Ultrasonic waves
- The type of used in bloodless surgery is Ultrasonic Waves
- The type of waves used to break gallstones in Kidneys are Ultrasonic waves
- The Waves that are used as insect repellants are Ultrasonic waves
- The waves used in SONAR devices is Ultrasonic waves
- The technique used in SONAR is called Echo ranging

- Doppler effect is applicable to <u>both Light and Sound</u>

- The speed of sound in air is <u>330m/s</u>

- The branch of science that deals with the study of infrasonic sound is called <u>Infrasonic</u>

- Sound requires a <u>material medium</u> for its propagation

- Sound is produced by the <u>Vibrations of bodies</u>

- Human ears cannot hear sounds of frequency <u>greater than 20,000Hz</u>

- The wavelength of ultrasonic is <u>less than 1.65cm</u>

- Ultrasonic waves can be used to <u>detect cracks and flaws</u> in metal castings

- If the ultrasound waves from a SONAR take t seconds to reach a submarine and the speed of sound in water is V then the distance of the submarines from the SONAR is equal to <u>vt/2</u>

- <u>SONAR</u> can be used to detect submarines

- Ultrasonic waves travel through water at a speed of 1500m/s if these waves take 3s to reach an object and come back to the sonar device, the distance of the under water object is <u>2250m</u>

- When a source of waves and the observer are approaching each other the observer feels that the frequency of the wave is <u>Increasing</u>

- When the source of waves and the observer are moving away from one another the observer feels that the frequency of waves is <u>Decreasing</u>

- Doppler effect is more pronounced for light waves than for <u>sound waves</u>

- A railway engine is stationed between two people A and B the engine is whistling and is closer to A than B, the frequency of the whistle remains constant for <u>both A and B</u>

- Radar gun usually employ <u>Radio waves</u>

- Doppler effect can be used to determine the <u>speed of stars and galaxies</u>

- The spectral lines of receding galaxies show red shift, the Red shift is due to <u>Speed of the recession of the galaxy concerned</u>

- The device SONAR was invented by <u>Paul Langevin</u>

- Infrasonic sound have the frequency <u>below 20Hz</u>

- In the equation $v = f \lambda$, f is <u>Frequency</u>

- The ultrasonic sound sent by the SONAR takes 5s to return from an object the distance of the object from the device Sonar is <u>3.75Kms</u>

- ECG is used to diagnosis of <u>Heart disease</u>

- When d =vt/2, d represents Depth
- Echoes are produced by Reflection of sound
- Supersonics is used for velocities greater than sound
- The effect of red shift is due to shifting of light towards Red end
- The source of sound is Vibrations of Bodies
- The velocity of sound in water is 1.5Kms/hr
- Doppler effect is used in tracking of artificial satellites
- The rotation period of sun's disc is measured by Doppler effect
- The tool used to diagnosis of fluid filled organs like Bladder, Kidneys is Ultrasonic waves
- The unit of frequency of waves is Hertz
- Ultrasonic waves are used in the manufacture of emulsions for photographic film

HEAT

- The primary source of heat energy is Sun
- The rate of expansion is least in Solids
- The rate of expansion is more in gases than in liquids
- The volume of water decreases as its temperature increases from $0^{o}c$ to $4^{o}c$
- The anomalous expansion of water is useful for Aquatic animals
- The volume of water increases as its temperature decreases from 0oc to 4oc
- As the total heat of the body increases the temperature also increases
- The SI unit of heat is Joule
- The SI unit of temperature is Kelvin
- As the quantity of matter increases the quantity of heat also increases
- The direction of transfer of heat depends upon the temperature
- The direction of transfer of heat does not depend on the quantity of heat
- The sum of the energies of all molecules is called Heat
- The average kinetic energy of the molecules is called Temperature
- The celcius scale of temperature was first proposed by Celcius of Sweden
- The freezing point of the pure water in celcius temperature scale is $0^{o}c$
- The boiling point of the pure water in celcius temperature scale is $100^{o}c$
- The interval between the freezing and boiling points in Celsius scale are divided into 100 equal divisions
- The fahernheit scale of temperature was first proposed by Fahrenheit
- The freezing point of pure water in Fahrenheit scale of temperature is $32^{o}F$
- The boiling point of pure water in Fahrenheit scale of temperature is $212^{o}F$

- The interval between the two fixed points in Fahrenheit scale are divided into 180 equal divisions
- An example for freezing mixtures is Sodium chloride
- The Kelvin scale of temperature was proposed by William Thomson
- The freezing point of pure water in Kelvin scale of temperature is 273K
- The boiling point of pure water in Kelvin scale of temperature is 373K
- The mercury thermometer was developed in the year 1714
- The mercury thermometer was invented by Gabriel Daniel Fahrenheit
- The device used to measure the humidity of air is Hygrometer
- The device Galvanometer was devised by Lord Kelvin
- The temperature of human body according to Celsius scale of temperature is $37^{o}c$
- The temperature of human body according to the Fahrenheit scale of temperature is $98.6^{o}F$
- The temperature of the human body according to the Kelvin scale of temperature is 310K
- The relationship between the Fahrenheit and Celsius scale of temperature is given by $F = 9/5^{o}C + 32$
- The relationship between Celsius and Fahrenheit scale of temperature is given by $^{o}C = 5/9(^{o}F - 32)$
- If the boiling point of water is 100oC, then the temperature in Fahrenheit scale is $212^{o}F$
- The relationship between the celcius and Kelvin scale of temperature is given by $^{o}C = K - 273$
- The relationship between Kelvin and celcius scale of temperature is given by equation $K = ^{o}C + 273$
- The type of thermometers used by the Doctors are Clinical thermometers
- The bulb of the maximum thermometer is filled with Mercury
- The bulb of the minimum thermometer is filled with Alcohol
- The contact between the lower part of indicator and surface of mercury is Minimum
- 1 Calorie is equal to 4.18 Joules
- The quantity of heat required to raise the temperature of one gram of water by one degree celcius is called Calorie
- The melting point of Iron in Celcius scale is $1535^{o}C$
- The boiling point of Iron in Kelvin scale of temperature is 3273K
- The melting point of Copper in celcius scale of temperature is $1083^{o}C$
- The boiling point of Copper in Kelvin scale of temperature is 2840K
- The melting point of Mercury in Kelvin scale is 234K
- The boiling point of mercury in Celcius scale is $357^{o}C$
- The melting point of Gold in celcius scale is $1063^{o}C$

- The boiling point of Gold in Kelvin scale of temperature is 3239K
- The melting point of Oxygen in Celcius scale of temperature is $-219^{o}C$
- The boiling point of Oxygen in Kelvin scale is 90K
- The temperature at which the solid substance melts is called Melting point
- The temperature at which the liquid starts boiling is called Boiling point
- The first person to declare that heat is type of motion was Thomson Rumford
- Two strips made of different metals and bound together with rivets is called a Bimetallic strip
- $35^{o}C$ in Kelvin scale is equal to 308K
- 73K is equal to $-200^{o}C$ in Celsius scale of temperature
- The Celsius scale and Fahrenheit thermometers show the same readings at $-40^{o}C$
- A device used to measure the temperature of a body is called Thermometer
- The principle of working of mercury thermometer is Liquid expand on heating and contract on cooling
- A thermometer that is designed to measure the both maximum and minimum temperature in a day is Maximum-Minimum thermometer
- The substance changes from solid to liquid form during Melting
- The substance changes from liquid to solid during Freezing
- The substance changes from liquid to gaseous during Boiling
- The speed of the molecules of a substance at absolute zero is Zero
- The chief principle of mercury thermometer is mercury expands on heating
- Heat produced by rubbing two hands is conversion of Mechanical energy into Heat energy
- The number of metals usually used in Bimetallic strip are 2
- The increase in the size of a substance due to heating is called Thermal expansion
- The increase in length of a wire or a rod on heating is called Linear Expansion
- In linear expansion the increase in length is directly proportional to its initial length
- The increase in the length of a solid rod of length 1m when its temperature is increased by $1^{0}C$ is called Co efficient of linear expansion
- The co efficient of linear expansion of Iron is 12×10^{-6}
- The co efficient of linear expansion of Copper is 17×10^{-6}
- The co efficient of linear expansion of Ice is 51×10^{-6}
- The co efficient of linear expansion of steel is 11×10^{-6}
- The co efficient of linear expansion of Brass is 18×10^{-6}
- The co efficient of linear expansion of Silver is 19×10^{-6}
- The co efficient of linear expansion of Nickel is 13×10^{-6}

- The co efficient of linear expansion of Invar steel is 0.9×10^{-6}
- The co efficient of linear expansion of Aluminum is 23×10^{-6}
- The co efficient of linear expansion of Lead is 29×10^{-6}
- A rod of iron of length 50cm becomes 50.12cm when its temperature is increased form 12^0C to 212^0C then the co efficient o linear expansion of Iron is $12 \times 10^{-6}\,{}^0C^{-1}$
- The quantity of heat required to increase the temperature of 1kg of a substance by 1^0C is called Specific heat
- The SI unit of Specific heat is joule / kilogram/ degree Celsius $(Jkg^{-1}C^{-1})$
- A lead block weighs 500gm then the amount of heat to be given to increase the temperature from 30^0C to 80^0C is 3500J
- The specific heat of brass is $380\ Jkg^{-1}C^{-1}$. A brass vessel weighing 5kg is at 20^0C then the amount of heat required to rise the temperature of vessel to 100^0C is 152KJ
- The mass of a ball of Iron is 100gm, the ball gives up 30 to 20 joule of heat when it is cooled from 373K to 303K then the specific heat of Iron is $460\ Jkg^{-1}C^{-1}$
- The conversion from the liquid to vapour is Evaporation
- The quantity of heat required to completely change 1kg of a substance from solid state to liquid state without increasing its temperature is Latent Heat of melting
- The unit of Latent heat of melting is Joule / kilogram
- Specific heat Q = mst
- The latent heat of melting of Iron is $270\ KJkg^{-1}$
- The latent heat of melting of Copper is $210\ KJkg^{-1}$
- The latent heat of melting of Mercury is $12\ KJkg^{-1}$
- The latent heat of melting of Silver is $87\ KJkg^{-1}$
- The latent heat of melting of Lead is $59\ KJkg^{-1}$
- The latent heat of melting of Ice is $336\ KJkg^{-1}$
- A device that converts heat energy into useful mechanical energy is called Heat Engine
- A heat engine in which the fuel is burned outside the cylinder of the engine is called External Combustion engine
- A heat engine in which the fuel is burned inside the cylinder of the engine is called Internal Combustion Engine
- The movement of the piston inside the cylinder of an engine from one dead centre to another is called Stroke

- The proportion of heat energy converted into useful mechanical energy by heat engine is called Efficiency of Work done

- The first person to construct the commercially successful heat engine is Thomas Savery in 1698

- An example for External combustion engine is steam Engine

- An example for Internal combustion engine is Petrol Engine

- An internal combustion engine which uses diesel as the fuel is called diesel engine

- In diesel engine the fuel is ignited by the heat generated by the compression

- In petrol engine the fuel is ignited by the Spark Plug

- The part of a steam engine that changes the linear motion into circular motion is Crankshaft

- The fuel commonly used in a steam engine is Coal

- An actual mechanical work is done in an internal combustion engine in Expansion Stroke

- The inlet vale is open in internal combustion engine during the Intake stroke

- The component that produces the fuel mixture in a petrol engine is Carburetor

- An component of external combustion engine which produces and stores steam is Boiler

- The efficiency of an external combustion engine is 15%

- The sum total of the kinetic energies of all molecules of a substance is measure of the heat contained by it

- In a steam engine the steam that is led in contains more heat than that comes out of it

- The piston moves outwards inside the cylinder

- An external combustion engine uses 40000joules of heat to do 5000joules of useful mechanical work. The efficiency of the engine is about 12%

- The efficiency of heat engine is always less than 1

- A steam engine cannot be used in small engines because it is bulky

- The internal combustion engine has higher efficiency than external combustion engine

- A steam engine cannot start instaneously because it takes time to produce steam at high pressure

- The order of strokes is Intake stroke-Compression stroke-Power stroke-Exhaust stroke

- The spark plug in the petrol helps to inginite the fuel mixture

- Crankshaft in a heat engine converts the linear motion of piston into rotatory motion

- During the compression stroke of a four stroke internal combustion engine both the inlet valve and outlet valve are closed

- During the expansion stroke of the internal combustion engine the piston moves away from the heat engine
- During the intake stroke of the four stroke petrol engine the fuel mixture enters the cylinder
- Diesel engine uses the sprayer to spray the fuel into the cylinder
- The efficiency of an internal combustion engine is 40%
- A heat engine uses heat H to do work equal to W, now the efficiency E of the engine is given by   E = W/H
- An engine has efficiency of 20%. How much heat does it consume to do 40,000J of work? 2000J
- A heat engine used 4800J of heat to do 1200J of work. The efficiency of the engine is 25%
- A heat engine does 3500J of work by using 10000J of heat, The engine is Petrol or Diesel engine
- The product of combustion consisting of carbon dioxide and water vapour expands suddenly in Power stroke
- The waste gases are pushed out of the cylinder through exhaust valve in Exhaust stroke
- Efficiency = work done/ heat supplied x 100
- The type of engine used in locomotives is steam engine
- Modern steam engine was invented by James Watt
- The main purpose of the heat engines in the olden ways was to lift water from the wells
- Petrol engine was invented by Nicholas otto
- Diesel engine was invented by Rudolf Diesel
- The toxic material emitted from the petrol engine is Carbon monoxide
- The device used in diesel engine in place of spark plug is Fuel injection pump
- According to second law of thermodynamics no engine is 100% efficient
- The function of pump in external combustion engine is transfer of content from condenser to boiler
- The petrol that minimize the air pollution is Oxidant petrol
- Diesel engine is not provided with a Spark plug
- Internal combustion engine was designed and constructed by Rudolf diesel
- Ignition in an internal combustion engine takes place between compression and power stroke
- Water kept in a closed vessel when boiled blows of the lid of the vessel , this is because of high pressure
- The stroke in which heat is liberated is Power stroke
- Diesel engine does not require Carburetor

- In petrol engine when both the inlet valve and outlet valve are closed, the mixture gets compressed
- A major product of combustion is Carbon dioxide
- The initial kinetic energy needed to start a petrol engine is provided by the Kick starter
- The risk of getting boiler busted is high because the steam is stored at a high pressure
- The single largest source of air pollution are Internal combustion engines
- The efficiency of a heat engine is 25% if 50000J of heat energy is supplied to the engine, the useful work done by the engine is 12500J
- Working of steam engine is due to latent heat
- The petrol that minimizes Air pollution is Load petrol
- The transfer of heat form the hotter end of the body to the cooler end is called conduction
- The transfer of heat that takes place through a medium due to the vibration of bodies is called conduction
- The transfer of heat that takes place by the actual movement of the particles in the medium is called Convection
- The transfer of heat that does not require any material medium is radiation

LIGHT

- The velocity of light in vaccum is 3×10^8 m/s
- The phenomenon of changing of direction of light when it passess from one medium to another is called Refraction
- The ratio between the sine of angle of incidence and sine of angle of refraction is always constant
- The incident ray and emergent ray are parallel to each other
- The ratio between the sine of the angle of incidence and sine of angle of refractrion is constant is called Snells law
- The constant between the sine of angle of incidence and sine of angle of refraction is refractive index
- The refractive index is denoted by the symbol μ
- The refractive index of diamond is 2.417
- The refractive index of Ice is 1.31
- The refractive index of water is 1.33
- The refractive index of Crown glass is 1.43 to 1.61
- The refractive index of tint glass is 1.53 to 1.96
- The refractive index of Air is 1.00027
- The value of refractive index of light depends on the nature of medium and color of light

- The critical angles of Crown glass is 41.3^o
- The critical angles of Water is 49°
- The critical angle of Diamond is 24°
- The total internal reflection takes place if light travels from a denser medium to rarer medium
- The angle of incidence is greater than the critical angle
- The minimum value of the angle of incidence required for the angle of refraction to be greater than 90° is called Critical angle
- The prism work on the principle of total internal reflection
- A spherical diamond is cut into 35 faces at the top
- A spherical diamond is cut into 25 faces at the bottom
- Bicycle reflector works on the principle of total internal reflection
- The optical illusion created by the total reflection of light is Mirage
- The optical fibres are used in Communication system
- The quantity of information that can be sent through the optical fibres is greater than the ordinary material
- The phenomenon of splitting of white light into its constituent colors is called Dispersion of light
- The set of seven colors of composite light is called Spectrum
- The phenomenon of splitting of light into seven colors was first observed by Sir Issac Newton
- During refraction the bending of red color light is least
- During refraction the bending of Violet color is maximum
- The naturally occurring spectrum of seven colors is Rainbow
- The color of the outer edge of primary rainbow is Red
- The color of the inner edge of the primary rainbow is Voilet
- The blue color of sky during day time is due to dispersion of light
- Angle of incidence is equal to angle of refraction
- The type of the mirror used as rear view in vehicles is Convex mirror
- The type of the mirror used in the headlights of the vehicles is Concave mirror
- The bulb should be placed at the principal focus of a concave mirror to make the light travel longer distance
- Refraction of light occurs due to change in the speed of light
- A ray of light that enters obliquely from a denser to a rarer medium will bend away from the normal
- A ray of light that enters obliquely from a rarer to denser medium will bend towards the normal

- A ray of light that enters at right angles to the surface of separation of two media will pass through without bending
- The bottom the coin placed in the plate filled with water appear raised due to refraction of light
- The bottom of the swimming pool appears raised due to refraction of light
- If the angle of incidence increases the angle of refraction increases
- The total reflection prisms are used in Optical instruments
- The sparking of diamond is due to total internal reflection
- The various colors present in white light are VIBGYOR
- The various colors present in solar spectrum are VIBGYOR
- Beautiful circular rings of colors formed in the sky due to the breaking of sunlight into its constituent colors is called Rainbow
- Rainbow forms when the water droplets are at the angular height of 40 to 40° from the horizon
- The refractive index of diamond is highest
- When a white light is passed through a triangular prism the refraction is highest for red and lowest for violet
- The refractive index of the medium is equal to the ratio between the speed of light in air and in the medium
- The angle of refraction when the light passes from one medium to another without bending is Zero
- The shape of the rainbow is Semicircular
- The phenomenon of bouncing back of light from a surface is called Reflection of light
- The phenomenon of bending of light when it travels from one medium to another is called Refraction of light
- The property of light to travel along straight lines is called rectilinear propogation of light
- The light of a single pure color is called Monochromatic light
- The light which consists of two or more colors is called Composite light
- The phenomenon of splitting of composite light into its constituent colors is called dispersion of light
- The band of colors obtained by dispersion of narrow beam of composite light is called Spectrum
- A device used to obtain pure spectrum of Polychromatic light using a prism is called a Spectroscope
- A spectrum in which the constituent colors of a composite light occupy their respective positions is called Pure spectrum

- A spectrum consisting of definite single lines against a dark background is called Line emission Spectrum
- A spectrum that has a number of dark lines or bands against the background of continuous spectrum is called line absorption Spectrum
- The several dark lines seen in the solar spectrum are called Fraunhoffer lines
- The phenomenon of scattering of light by molecules in which there is a change of frequency due to the molecules gaining or losing energy is called Raman scattering
- Sir Isaac Newton showed that sunlight is made up of Seven distinct colors
- A medium that brings about dispersion of composite light is called Dispersive medium
- The dispersive medium in which the dispersion of composite light does not take place is vaccum
- The range of wavelength of the visible spectrum is 400nm to 750nm
- The common unit of wavelength is Angstrom
- 1 Angstrom is equal to 10^{-10}m
- 1 nanometer is equal to 10^{-9}m
- The spectra formed from bodies emitting radiations is called Emission Spectra
- A spectrum that consists of a continuous series of overlapping frequencies is called a Continuous Spectrum
- An example for Line emission spectrum is Sodium vapour lamp
- The study of Fraunhoffer lines helps to study the elements in the solar atmosphere
- Rayleigh scattering is also called as Coherent scattering
- Rayleigh scattering is called as coherent scattering because there will be no change in the wavelength of light even after scattering
- The Intensity of scattered light is inversely proportional to the fourth power of its wavelength
- The change in the frequency of the incident light by certain molecules is known as Raman Effect
- Raman scattering is also called as Incoherent scattering
- Raman scattering is called Incoherent scattering because the scattered light contain certain lower and higher frequencies along with incident frequencies
- Raman explained his effect on the basis of Quantum theory of radiation
- Raman effect is useful in the study of molecular energy levels
- The National science Day is observed on 28th February
- The Raman Effect was discovered in the year 1928
- The speed of light in vaccum or air is 3,00,000 Km/s
- An example of spectrum formed in nature is Rainbow
- The type of spectrum we get from an arc lamp is Continuous emission spectrum

- In Visible spectrum, the color which has the highest wavelength is <u>Red light</u>
- In visible spectrum, the color which has the least wavelength is <u>Violet light</u>
- The width of the slit in spectroscope to obtain the pure spectrum is <u>less than 0.05mm</u>
- The lenses are placed before and after the prism in spectroscope to <u>minimize overlapping to colors</u>
- The part in the spectroscope that renders the light into parallel beams is <u>Collimator</u>
- The correct explanation for the Blue color of sky was given by <u>Lord Rayleigh</u>
- An example for incoherent scattering of light is <u>Raman scattering</u>
- An example for coherent scattering of light is <u>Rayleigh Scattering</u>
- The two organic liquids in which Raman scattering can be absorbed are <u>Benzene and Toluene</u>
- The C.V Raman was awarded the Noble prize in <u>1930</u>
- When a ray of light travels from one medium to another there will be change in <u>wavelength , velocity</u>
- Refractive index is the ratio between the <u>speed of light in vaccum and the medium</u>
- Colors in the rainbow is due to <u>Dispersion of light</u>
- The order of Seven colors in a white light is <u>VIBGYOR</u>
- A device that helps to cause dispersion of a composite light is a <u>Prism</u>
- Dispersion of composite light caused by the prism is due to variation of <u>refractive index with the color of light</u>
- An example of Monochromatic light is <u>Laser light</u>
- In a spectrum, red color is deviated to lesser extent than all the colors, because <u>its speed is not related</u>
- An example for continuous emission spectrum is <u>Candle flame</u>
- In Rayleigh scattering the incident light and the scattered light will have the <u>same frequency</u>
- The nature of a visible spectrum depends on <u>the kind of light emitted by the source</u>
- A continuous emission spectrum consists of <u>an unbroken series of all wavelength without any abrupt change in between</u>
- A spectrum of very hot luminous body is a <u>Continuous emission spectrum</u>
- Light from a carbon arc lamp is passed through a sodium vapour lamp and then allowed to enter a spectrometer, now the resulting spectrum consists of two dark lines in <u>the yellow region</u>
- The element that was discovered in the sun by a study of Fraunhoffer lines was <u>Helium</u>
- When monochromatic light is passed through benzene, the scattered light contains <u>frequencies that are both higher and lower than that of the incident light</u>
- Sir C.V.Raman was awarded Noble prize for his work on <u>Incoherent scattering of light</u>

- The light which give rainbow like spectrum is Continuous emission spectrum
- VIBGYOR is the component colors of white light
- The symbol for refractive indices is Sin i/ Sin r
- The approximate wavelength of Electromagnetic radiation is 4×10^{-7} to 5×10^{-9}
- Every year is celebrated as National Science Day to commemorate Raman Discovery
- Collimator in a spectrometer helps the light to travel Parallely
- The telescope helps to observe the magnified image of the spectrum
- The angle of prism, refractive index and dispersion are measured by Spectrometer
- The dispersive medium for light is Prism
- A composite light is made to pass through a prism and then through an inverted prism, the color of light emerging out of the inverted prism is White
- If the colors in the spectrum are overlapping and are not distinct then it is called Impure spectrum
- A filament lamp produces continuous emission spectrum
- A composite light is made to pass through mercury, it produces line emission spectrum
- When a white light from carbon passes through sodium vapour, the spectrum does not show the yellow
- The background color of line emission spectrum is Black
- Line from a molten iron produces a Continuous spectrum
- A piece of transparent material that has at least one curved surface is Lens
- Lenses are named on the basis of the shape of their surfaces
- In convex lens the central portion is thicker than the edges
- In concave lens the central portion is thinner than the edges
- The phenomenon of rays of light refracted through convex lens meet at one point is Convergence of Light
- The centers of imagined spheres of which the surfaces of the lens are parts is Center of Curvature
- The imaginary line joining the centers of Curvature is Principal axis
- The radius of a sphere of which a surface of a lens is a part is radius of Curvature
- The geometric center of the lens is Optic center
- The rays of light parallel to the principal axis of the convex lens enter the lens and get refracted and then converge at a particular point on the principal axis is Principal focus of the convex lens
- The rays of light parallel to the principal axis of the convex lens enter the lens and get refracted and then diverge at a particular point on the principal axis is Principal focus of the Concave lens
- The distance between the optic center and the principal focus of a lens is Focal Length

- The focal length of a convex lens is always written as + sign
- The focal length of the concave lens is always written with – sign
- The angle of incidence when a ray of light passes through a optic center of lens is 90^0
- The angle of incidence of light travelling along the principal axis is 0^0
- The image formed by the concave lens is always Virtual
- The nature of image formed by the concave lens when the object is at infinity is Virtual, Erect, Small
- The nature of image formed by the concave lens when the object is Beyond 2F is Virtual, Erect, Small
- The nature of image formed by the concave lens when the object is at 2F is Virtual, Erect, Small
- The nature of image formed by concave lens when object is between F and 2F is Virtual, Erect, Small
- The nature of image formed by the concave lens when the object is at F is Virtual, Erect, Small
- The nature of image formed by the concave lens when the object is between F and optic center is Virtual, Erect, Small
- The nature of image formed by the convex lens when the object is at infinity is real inverted.
- The nature of image formed by the convex lens when the object is between F and 2F is real inverted.
- The defect of eye to see clearly the nearer objects but not the far away is Short sightedness
- The defect of eye to see clearly the far away objects but not the nearer is Long sightedness
- The lens used to rectify short sightedness is Concave lens
- The lens used to rectify long sightedness is Convex lens
- The instrument used to form a real image of an object on the screen using a convex lens is Camera
- The instrument used to see the micro organisms is Microscope
- The instrument used to observe the distance stars, planets and satellites is Astronomical telescope.
- If the light rays travelling in different directions form a source of light is called Divergent rays
- If the light rays travelling are meeting at a point is called Convergent rays
- The incident ray, reflected ray and the normal at the point of incidence are all in the same plane is called First law of reflection
- The angle of incidence is equal to the angle of reflection is called Second law of Reflection
- If the angle of incidence is 45^0 then the angle of reflection is 45^0

- The formula used to find the number of images formed when two plane mirrors are placed at the different angles is 360/ angle between the mirrors – 1
- The instrument used to see the objects which are not in the same level is Periscope
- The spherical mirror with the reflecting surface is hollow is Concave lens
- The spherical mirror with the reflecting surface is bulged is Convex lens

THE UNIVERSE

- The diameter of the earth is about 12800kms
- The objects in the sky are called Celestial objects
- The imaginary sphere that appears to meet the ground is called Horizon
- The imaginary sphere is called Celestial sphere
- The pole star appears in the same direction from the northern hemisphere of the earth
- The elevation above the horizon is called Altitude
- The brightest constellation which is easy to identify is Orion
- The group of seven stars in the north are called Saptharishi
- The brightest star is Sirius
- The brightest star Sirius is in the constellation Canis major
- The Indian name of constellation canis major is Lubdhaka
- The group of billion of stars is called Galaxy
- The stars which are visible to the naked eye belong to Milky way galaxy
- The natural satellite of the earth is Moon
- The average distance of the moon from the earth is 384,000kms
- The diameter of the moon is 3476kms
- The revolution period of the moon is 27.32 days
- The rotation period of the moon is 27.32 days
- Only one face of the moon is visible because its period of revolution and rotation is same
- The duration of full moon to full moon is 29.53 days
- When the full moon rises in the east the sun sets in the west at 180° away
- The moon rises at 9am on the day of Vinayaka chaturti
- The moon sets at 9pm on the day of Vinayaka Chaturthi
- The periodical variations in the shape of moon are called Phases of moon
- The crescent moon is visible in the evening in the direction of West
- The star seen in the month of Pushya is Pushya
- The star seen in the month of Ashwayuja is Ashwini
- The ocean swells in the diretion of moon
- Moon is responsible of occurrence of high and low tides

- The radius of the sun is 6.9×10^5 km
- The average distance of the sun from the earth is 150,000,000kms
- The time taken by the light from sun to reach the earth is 8.3 min
- The angle between the celestial sphere and ecliptic is 231/2 degrees
- The vernal equinox is on march 21
- The Autumnal equinox is on September 22
- The sun appears to move towards the north of celestial equator after March 21
- The sun appear to move towards the south of celestial equator after September 22
- The number of planets in the solar system are 9
- 1 Astronomical unit is equal to 150,000,000kms
- The celestial objects that twinkle in the night are Stars
- The planet Venus appear to be in the constellation Taurus
- The planet Mars is in the constellation Pisces
- The planet Jupiter lies in the constellation Virgo
- The sun lies in the constellation cancer
- The planet Mercury lies in the constellation Leo
- The brightest planet is Venus
- The planet mercury is seen near the Horizon
- The Planet mercury is visible in the west after the sunset
- The planet Jupiter is visible slightly to the west of Zenith
- The size of full moon is ½ degree
- The red color of the planet Mars is due to the Iron Oxide on the soil
- 1 degree is equal to 60(arc) minutes
- 1 minute is equal to 60(arc) seconds
- Venus in crescent phase has angular size of 64 arc seconds
- Venus at gibbous phase has angular size of 10 arc seconds
- The duration of Lunar eclipse is longer than that of the Solar eclipse
- Solar eclipse occurs on the New moon day
- Lunar eclipse occurs on the Full moon day
- The time taken by the moon to cross the umbral region of the earth is called Duration of Lunar eclipse
- The apparent daily motion of the celestial objects in the sky from east to west is called Diurnal motion
- The star located in the direction of the axis of the earth in the northern direction is called Pole star
- The star that does not show diurnal motion is Pole star
- The pole star is visible from the Northern Hemisphere

- The pole star is not visible from the Southern Hemisphere
- The pole star always appear in the same direction because the diameter of earth is smaller than the distance of pole star
- The constellation saptharishi is also called Ursa Major
- The orion nebula is located in the constellation Orion
- The solar system is located in Milky way galaxy
- The shape of Milky way galaxy is Spiral
- The stars that are engulfed in the structure are called Nebula
- The Indian name of Milky Way galaxy is Akashganga
- The first two stars of the constellation are called Pointer stars
- The visible stars in the sky are grouped into 88 constellations
- A group of stars in the sky that form a regular pattern in the sky at night is called a Constellation
- The angle between the sun and the moon on a full moon day is 180 degree
- The various phases of the moon are due to variation in the sunlit portion
- If the sunlit portion is towards the earth the phase of the moon is Full moon
- If the sunlit portion is not at all presented we have New moon phase
- The full moon occurs once in 29 days due to movement of the earth
- The moon remains in the horizon for 12 hours during a day
- The zodiac is divided into 12 equal parts
- A belt in the celestial sphere in which we find sun, the moon and the principal constellations is called Zodiac
- The stars twinkle due to reflection of light
- The brightness of the stars vary due to distance of them
- The period of revolution of the earth is 365 days
- The period of rotation of earth is 24 hrs
- The sun crosses the celestial equator 2 times in the course of a year
- The biggest planet in the solar system is Jupiter
- The planet nearest to the sun is Mercury
- The constellation used to identify pole star is Ursa Major
- The comet lies in the constellation Cassiopedia
- The planet Saturn lies in the constellation Aquarious
- A month in the Indian lunar calendar system is divided into 2 Pakshas
- If the half moon is visible in the Zenith in the morning it will be again visible in the evening in the zenith after 15 days
- The phase of half moon is called quarter
- The motion of the earth around the sun is called Annual motion

- The points where the celestial equator and ecliptic meet are called Equinoxes
- The imaginary circle in the sky representing the apparent path of the sun is called Ecliptic
- The average distance of the planet Mercury from the sun is 0.39AU
- The average distance of the planet Mars from the sun is 1.52AU
- The average distance of the planet Pluto from the sun is 39.81AU
- The phases of moon are 4
- The sun and the host of celestial objects revolving round it are together called Solar System
- The total amount of energy emitted by a source in 1second is called Luminosity
- The visible disc of the sun is called Photosphere
- The layer of the sun lying just above the photosphere is called Chromosphere
- The layer of the sun which is visible only during the total solar eclipse is called Corona
- The dark irregular patches on the surface of the sun are called Sun spots
- The distance traveled by light in one year is called Light year
- A system of stars comprising of hundreds or thousands of millions of stars held together by the force of gravity is called Galaxy
- The branch of science that deals with the study of universe is called Cosmology
- A celestial object in which the escape velocity is greater than the speed of light is called Black hole
- The velocity of recession of a celestial body is proportional to its distance from the observer is called Hubble's law
- The awesome explosion of the primordial fireball which marked the beginning of universe about 15-20 billion years ago is known as Big Bang
- The imaginary sphere on the inner surface of which the celestial bodies appear to attach is called Celestial Sphere
- The star nearest to the earth is Sun
- The distance of sun from the earth is 1.5×10^8km
- The time taken by a light from the sun to reach the earth is 8.3min
- The mass of the sun is about 2×10^{30}Kg
- The surface temperature of sun is about 6000K
- The total amount of energy radiated by the sun per second is called Solar luminosity
- The solar luminosity of Sun is 3.9×10^{26}W

- The places in India where the two large telescopes are situated are Udaipur and Kodaikanal
- The period of rotation of the sun is 26 days
- The direction of rotation of the sun is from West to East
- The grain like pattern found on the photosphere of the sun are called Granulations
- The thread like structures found on the surface of the sun are called Spicules
- The short outbursts emerging from the solar surface are called Solar flares
- The temperature of the region of sunspots is about 4000K
- A display of streams of colored light seen in night sky in the polar regions of earth is called Aurora
- The source of energy of the sun are Thermonuclear reactions
- 1 light year is equal to 10^{16}m
- 1 parsec is equal to 3.26 light years
- Stars differ in color due to difference in their temperature
- The scale used to express the brightness of stars is Magnitude scale
- The magnitude of sun is –27
- The magnitude of the moon is –13
- The magnitude of the star Sirius is –1.4
- The magnitude of the star Vega is 0
- The magnitude difference of 1 is equal to the ratio of 2.5
- The magnitude difference of 2 is equal to the ratio 6.25
- The magnitude difference of 3 is equal to the ratio 15.6
- The magnitude difference of 4 is equal to the ratio 40
- The magnitude difference of 5 is equal to the ratio 100
- The value of luminosity of star depends upon the temperature and diameter of star
- The luminosity of star Sirius is 23.5Lo
- The size of stars are determined from their luminosity and temperature
- The galaxy next to the Milky way galaxy is Andromeda
- The shape of the galaxy Andromeda is Spiral
- The number of galaxies estimated to be present in the universe are 10^{11} million
- The distance of farthest galaxy visible through a telescope is about 3×10^{9} light years

- The process involved in entire life cycle of a star from its birth to death is called Stellar evolution
- Massive collection of gaseous matter which contracting under influence of its gravity Protostar
- The value of Chandrasekhar's mass limit is 1.4Mo
- The matter in the protostar is made up of Hydrogen
- Shell of glowing gaseous matter surrounding evolved star from which it ejected Planetary Nebula
- A star in the constellation Orion is Betelgeuse
- A helium star that is extremely dense, small and bright is called White dwarf
- The nuclear fuel in a White dwarf is Helium
- The nuclear fuel in a main sequence star is Hydrogen
- The spectacular explosion of the outer shell of a massive star that occurs at the end of the red giant phase is called Supernova
- A spinning neutron star that emits radio waves is called Pulsar
- A highly dense object collapsed under the influence of its own gravity, formed during supernova explosion is called Neutron star
- An aggregation of relatively small number of stars which are held together by gravity and move together are called Star Cluster
- The age of the universe estimated to be about 10 to20 billion years
- The SI unit of luminosity is Watt (W)
- The temperature of the interior of the sun is about 20 million degrees
- An example of yellow star is Sun
- The star of magnitude 3 is 100 times brighter than the star of magnitude 8
- An example for a binary star is Sirius
- The galaxy in which the sun is present is Milky way
- The shape of the Milky way galaxy is Spiral
- The mass of Milky way galaxy is about 3×10^{41} Kg
- The final end stage of the star of mass 30Mo is Black hole
- The only star in the solar system is Sun
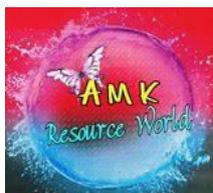- The densest objects in the universe is Black holes

- Sun is the brightest star as seen from earth because of its temperature and proximity to the earth
- The mass of sun is 3 lakh times than the earth
- The force that keeps the planets to move around the sun is Gravitational force
- Existence of elements like sodium, calcium helium in sun is established by study Fraunhoffer lines
- The sunspots on the surface of sun have lower temperature than the surface of sun
- The polar lights are due to interactions between the earth's magnetic field and charged particles emitted by the sun
- The energy of the sun is due to nuclear fusion reactions taking place at the core
- The energy produced at the core reaches its surface by Convention and radiation
- A star's apparent brightness depends upon its actual brightness and distance
- A star of magnitude 2 is brighter than a star of magnitude 7 by a factor of 100 times
- A star of magnitude 1 is brighter than the star of magnitude 6 by a factor of 100 times
- A star of magnitude 5 is brighter than a star of magnitude 6 by a factor of 2.5 times
- The star of magnitude 1 is brighter than a star of magnitude 3 by a factor of 6.25 times
- The apparent brightness of the star is lower if its magnitude is higher
- The hottest star is a Blue star
- The range of radii of majority of the stars is 0.1 to 20 times the solar radius
- The luminosity of star usually increase with mass
- Sirius is a binary star, its components has masses 1.4Mo and 2.4Mo
- The number of stars in a Milky way galaxy are 10^{11}
- The diameter of Milky way is about 100000 light years
- The period of revolution of the solar system around the Milky way is about 250 million years
- The speed of the revolution of the solar system around our galaxy is about 250Km/s
- The central thickness of the milky way galaxy is about 6000ly
- The sun is at the Centre of the Milky way galaxy
- The mass of milky way is about 2×10^{11}Mo
- The matter at the core of the protostar is Hydrogen
- A massive gaseous cloud contracting under the influence of gravity is known as Protostar
- Pulsar is another name of a Neutron star

- Red shift for a galaxy indicates its recession

- The stars which orbit each other about a common centre of gravity are known as Binary stars

- The rate of recession of a body is directly proportional to the distance from us

- The sun would become a black hole if it is compressed to the radius of 3km

- Big Bang theory is supported by the recession of Galaxies

- The first stage of birth of star is Protostar

- Aurora are seen near the poles of the earth

- The temperature range of Red star is 2500–3500K

- The temperature range of Orange yellow star is 3500–5000K

- The temperature range of Yellow star is 5000–6000K

- The temperature range of Yellowish white star is 6000–10,000K

- The temperature range of Bluish white star is 10,000–50,000K

- An example for Orange yellow star is Arcturus

- An example for Yellow star is Sun

- An example for Yellowish white star is Sirius

- An example for Bluish white star is Rigel

- The magnitude scale of Naked eye is +5

- The magnitude scale of planet Pluto is +15

- The galaxies which are thousand times brighter than ordinary galaxies are Quasars

- The name of our galaxy is Milky Way

- The Big Bang theory was proposed by Edwin Hubble

- During supernova the materials are thrown at a speed of about 10^4Kms/s

- The farthest star visible to naked eye has the magnitude +6

- The first supernova explosion occurred in 1006A.D

- The second supernova explosion occurred in 1054

- The third supernova explosion was observed by Tycho Brahe

- The fourth supernova explosion was observed by Johannes Kepler

- The supernova of 1572 is called Tycho's star

- The supernova of 1604 is called Kepler's star

- The star clusters are classified into different types based upon their appearance

- Solar telescopes are special telescopes designed to study the sun

- The elements that are present in sun are sodium, calcium and hydrogen
- The galaxy Milky way was observed by Galileo
- During supernova the materials are thrown out at the speed of 10^4Km/s., A sphere of neutrons will remain at the centre
- Two stars have a magnitude difference of 6, the brightness ratio is 1:100
- The huge flares that often loop back into the atmosphere are Solar Prominence
- The system of measuring masses of stars based on their motion is called Binary star
- A brightness ratio of 2.5 corresponds to a magnitude difference of 1
- A brightness ratio of 6.25 corresponds to a magnitude difference of 2
- A brightness ratio of 15.6 correspond to a magnitude difference of 3
- A brightness ratio of 40 corresponds to a magnitude difference of 4
- A brightness ratio of 100 corresponds to a magnitude difference of 5
- One parse equal to 3×10^{13}Km
- The rotation movement of the sun can be confirmed based on the changing position of Sunspots
- In Red giant stage, clouds of hydrogen gas detached and thrown to space are Planetary Nebulae
- Immanuel kant was able to show that the nebulae are indeed galaxies similar to our galaxy
- An example for strange star is Red giants
- The vast surrounding place is called Universe
- 1 light year is equal to 9.46×10^{12} Km
- The two most common shapes of galaxies are Spiral and Elliptical
- The group of stars that resemble a certain shape are called Constellations
- The Indian name of Milky way galaxy is Akash ganga
- The nearest star to the earth other than sun is Alpha Centuari
- The exploding star is called Supernova
- A spinning neuron star emits Radio Waves
- The main source of heat and light to all members of solar system is Sun
- The sunspots are dark in color because the temperature is less than the temperature of photosphere
- The dark lines in the solar spectrum are Fraunhoffer lines

- The stellar distance is measured in Light year and Parsec
- The faint cloudy patches seen in the night sky is Nebulae
- The motion of galaxy is studied by Doppler effect
- The order of the stages of life cycle of medium size star is Protostar-Red giant-White dwarf

Visit our Website

www.amkresourceinfo.com

---------JOIN US by CLICK here---------

ANDROID APP ON Google Play   JOIN OUR GROUP ON Facebook   Join our WhatsApp Group

Important Links in our Website

Daily Newspapers : http://amkresourceinfo.com/daily-newspapers/

Job Notifications : http://amkresourceinfo.com/job-notifications/

E Books : http://amkresourceinfo.com/e-books-2/

E Magazines : http://amkresourceinfo.com/e-magazines-2/

Online Buy Books : http://amkresourceinfo.com/online-buy-books/

Free Exam Study Materials

RRB – Group D : http://amkresourceinfo.com/rrb-group-d/

UGC – NET : http://amkresourceinfo.com/ugc-net-2/

KSRP / KSP / KSISF / Civil Police Constable : http://amkresourceinfo.com/police-constable-civil-ksrp-ksisf/

And many more...........

Keep visiting for more updates

"Your Success, Our Motto"