

GENERAL SCIENCE

Nutrition

- Nutrition includes all the stuff that's in food, such vitamins, protein, fat, carbohydrates and more. It's important to eat a variety of food, including fruits, vegetables, dairy products, and grains, because these are essential to attain healthy body and mind.
- But, excessive intake of food calories leads to obesity, high B.P. and heart problems, and the person gets prone to diabetes, hypertension and other disorders.
- Water is also an important part of a balanced diet. It helps in digestion, transportation, excretion and to regulate body temperature (body contains 65% water).
- Lost water can be recouped (regained) in 3 ways—By drinking water, by getting water as part of food and by retaining and utilising the water produced in the metabolism.
- Though roughage does not provide energy but it helps in retaining water in the body.
- Vitamins also do not provide energy but help in different physiological processes.
- Apart from organic chemicals such as C, H, O, N, human body needs inorganic chemical elements, called minerals, for a wide range of functions. These elements are present in the form of ions.
- Minerals help maintain the volume of water necessary to life processes in the body.

➤ CARBOHYDRATES

- Most foods contain carbohydrates, which the body breaks down into simple sugars—the major source of energy for the body.
 - There are two major types of carbohydrates (or carbs) in foods: simple and complex.
 - Simple carbohydrates: These are also called simple sugars. Simple sugars are found in refined sugars, like the white sugar. If you lollipop. But you'll also find simple sugars in more nutritious foods, such as fruit and milk. It's better to get your simple sugars from food like fruit and milk. Why? Because they contain vitamins, fibre, and important nutrients like calcium. A lollipop does not.
 - Complex carbohydrates: These are also called starches. Starches include grain products, such as bread, crackers, pasta, and rice. As with simple sugars, some complex carbohydrate foods are better choices than others. Refined grains, such as white flour and white rice, have been processed, which removes nutrients and fibre. But unrefined grains still contain these vitamins and minerals. Unrefined grains also are rich in fibre, which helps your digestive system work well. Fibre helps you feel full, so you are less likely to overeat these foods. That explains why a bowl of oatmeal fills you up better than a sugar candy.
 - Constitutes 3 elements—C, H and O.
 - 1gm gives 17 kJ of energy (or 4 kcal of energy).
 - Main source of energy providers.
 - An adult man with average weight and doing moderate work needs about 500gm of carbohydrates daily. Growing child, nursing mother and sportsf-persons need more carbohydrates.
 - D- fructose is the sweetest of sugars. It is found in fruit juices, honey, etc.
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➤ **Fats**

- Fat is a component in food. Some foods, including most fruits and vegetables, have almost no fat. Other foods have plenty of fat. They include nuts, oils, butter and meats like beef.
- Provides twice the energy of carbohydrates (1gm provides 37kJ or 9 kcal of energy) (2.25 times more energy than carbohydrates).
- Acts as the reserve food materials because excess fat is stored in the liver and as adipose tissue. As the fats produce more energy on oxidation than glycogen, they are more suitable as stored food. Stored fat is used as fuel when glucose is not available.
- Requirement-50gms daily.
- A person should draw 10-15% of total calorie requirements from fat.
- Some fats are better than others. Here are the three major types.
- Unsaturated fats: These are found in plant foods and fish. These may be good for heart health. The best of the unsaturated fats are found in olive oil, peanut oil, canola oil, albacore tuna and salmon.
- Saturated fats: These fats are found in meat and other animal products, such as butter, cheese, and all milk except skim. Saturated fats are also in palm and coconut oils, which are often used in commercial baked goods. Excess of saturated fat increases the blood-cholesterol level and may cause arteriosclerosis (hardening of arteries). This may lead to heart attack.
- Trans fats: These fats are found in margarine, especially the sticks. Trans fats are also found in certain foods that you buy at the store or in a restaurant, such as snack foods, baked goods, and fried foods. Like saturated fats, trans fats can raise cholesterol and increase the risk of heart disease.
- In whales and seals, the fat of the skin forms a thick layer called blubber which is not only reserve food but also maintains the body temperature.

➤ **PROTEINS**

- Protein builds up, maintains, and replaces the tissues in body. Muscles, organs, and immune system are made up mostly of protein.
 - 75% of our body is proteins only.
 - Made up of C, H, O, and N.
 - Many foods contain protein but the best sources are beef, poultry, fish eggs, dairy products, nuts, seeds, and legumes like black beans and lentils.
 - Body uses the protein to make lots of specialised protein molecules that have specific jobs. For instance, body uses protein to make Haemoglobin, the part of red blood cells that carries oxygen to every part of body. Other proteins are used to build cardiac muscle, i.e. heart.
 - Proteins are sometimes described as long necklaces with differently shaped beads. Each bead is a small amino acid. These amino acids can join together to make thousands of different proteins.
 - Scientists have found many different amino acids in protein, but only 22 of them are very important to human health.
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- Of these 22 amino acids, body can make 13 of them. Body can't make the other nine amino acids, but it can get them by protein-rich foods. They are called essential amino acids. They include isoleucine, leucine, lysine, methionine, phenylalanine, threonine, tryptophan and valine.
- Proteins from animal sources, such as meat and milk, is called complete, because it contains all nine of the essential amino acids.
- Most vegetable proteins are considered incomplete because it lacks one or more of the essential amino acids.
- About 70-100gms of proteins are daily needed.

| IMPORTANT VITAMINS | | |
|-------------------------------------|--|---|
| Name | Sources | Effect of deficiency |
| Vit.A | Vit.A Synthesised in cells of liver and intestinal mucous members from carotenoid pigments; found in milk, butter, kidneys, egg yolk, liver, fish oil etc. | Xerophthalia (due to non function of lacrimal gland of conjunctivaj is characterized by keratinized conjunctive and keratinization in linings of respiratory passages, urinary bladder, ureters and intestinal mucosa; neight-blindness (nyctalopia, a disturbance of rod vision); impaired growth glandular secretion and reproduction. [Hypervitaminosis A results in lack of appetite, sparcity of hair, itching rash, painful swellings over long bones.] |
| B ₁ (Thiamine) | Rice bran, whole wheat flour, oatmeal, eggs, yeast, meat, lever etc. | Beri-beri:Loss of appertite and vigour, oedema of legs, constipation weak hearbeat, muscle atrophy, even paralysis. |
| B ₂ or G (Riboflavin) | Cheese, eggs, yeast, tomatoes, green vegetables, liver, meat, cereals etc. | Cheilosis (fissures at the corners of mouth and lips) digestive disorders, burning sensations in skin and eyes, headache, mental depression, scally dermatitis at angles of nostrils, kereatits of cornea, glosstits (inflammation of tongue). |
| B ₃ orPP ₃ | Freash meat, liver, fish, cereals, milk, pulses, yeast, | Pellagraf characterized by dermatitis (inflammation of |

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| (Nicotinic acid or Niacin) | etc. | skin), diarrhea, dementia and death (hence called 4 D inflammation of gut mucous membrane, nervousness, headache, fatigue, mental depression etc. |
| B ₆ (Pyridoxine) | Milk, cereals, fish, meat liver, yeast; synthesized by intestinal bacteria | Dermatitis, anaemia, convulsions, nausea, vomiting, mental disorders. |
| B ₅ (Pantothenic acid) | All food; more in yeast, liver, kidneys, eggs, meat, milk, sugarcane, groundnut, tomatoes | Dermatitis, gastro-intestinal disorders, anaemia, reduced secretion of steroid hormones, burning feet syndrome, fatigue, nausea, fatty liver in men. |
| Vit. H (Cyanocobalamin) | Meat, fish, liver, eggs, milk; synthesized by intestinal bacteria | Scurvy (also called sailor's disease) characterized by delayed wound-healing and growth retardation; breakdown of immune defense system; fragile blood vessels, spongy and bleeding gums and bones; exhaustion; nervous breakdown; high fever |
| Vit. D (Ergocalciferol and Cholecalciferol) | Synthesized in skin cells in sunlight from 7-dehydrocholesterol (i.e., provitamin D ₃) liver, kidneys, egg yolk, fish oil, etc. | Rickets, a disorder of children of 6 months to 2 years due to deficient ossification of bones is characterized with bending of bones and swelling joints. Osteomalacia, a disorder of adults characterized by fragility of bones. (Hypervitaminosis D results in deposition of calcium in soft tissue). |
| Vit. E (Tocopherol) | Green vegetables, oils, egg yolk, wheat, animal tissues. | Reversible sterility in female, characterized by normal ovulation, fertilization and implantation by foetus time. In males, it causes atrophy of spermatogenic tubules of testes, it further causes sterility. Muscular dystrophy, anaemia due to increased breakdown of blood cells. |
| Vit. K (Phylloquinone) | Carrots, lettuce, cabbage, tomatoes, liver, egg yolk, cheese, synthesized by colon | Haemorrhages, excessive bleeding of injury due to delayed blood clotting, condition is called |

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| IMPORTANT MINERALS | | | |
|---------------------------|--|---|--|
| Mineral | Sources | Significance | Effects of deficiency |
| Calcium (Ca)* | Milks, cereals, chesse, green vegetables | Required for formation of teeth and bones, blood clotting, functions of nerves and muscles | Weak teeth and bones; retarded body growth. |
| Phosphorus (P) | Milk, meat cereals | Required for formation of teeth and bones and acid-base balance; component of ATP, DNA, RNA | Weak teeth and bones; retarded body growth and physiology. |
| Sulphur (S) | Many proteins of food | Component of many amino acids | Disturbed protein metabolism |
| Potassium (K) | Meat, milk, cereals, fruits and vegetables | Required for acid-base balance, water regulation and function of nerves. | Low blood pressure, weak muscles; risk of paralysis. |
| Chlorine (Cl) | Table salt | Required for acid-base balance; component of gastric juice | Loss of appetite; muscle cramps. |
| Sodium (Na) | Table salt | Required for acid-base and water balances and nervous functions | Low blood pressure, loss of appetite; muscle cramps. |
| Magnesium (Mg) | Cereals, green vegetables | Cofactor of many enzymes of glycolysis and a number of other metabolic reactions dependent upon ATP | Irregularities of metabolism, principally affecting nervous functions. |
| Iron (Fe) | Meat, eggs, cereals, green | Component of haemoglobin and cytochromes | Anaemia, weakness and weak immunity. |

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| | vegetables | | |
| Iodine (I) | Milk, cheese, sea food, iodised salt | Important component of thyroxine hormone | Goitre, Cretinism. |
| Fluorine (F) | Drinking water, tea, sea food | Maintenance of bones and teeth | Weak teeth, larger amount causes motting of teeth. |

| IMPORTANT HORMONES | | |
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| Name | Source | Effect |
| Neurohormones | Hypothalamus | Release of hormones from pituitary. |
| Growth stimulating Hormone (GSH) | Pituitary Glands | Controls the general growth of the body. |
| Gonadotrophic Hormone (GTH) | Pituitary Glands | Stimulates the primary sex hormones i.e., ovaries and testes |
| Lactogenic Hormone | Pituitary Glands | Initiates milk production in the pregnant female. |
| Thyrotrophic Hormone | Pituitary Glands | Aids in the regulation of thyroid secretion. |
| Adrenocorticotrophic Hormone (ACTH) | Pituitary Glands | Influences the secretion from the cortex of adrenal glands. |
| Oxytocin or Metabolic Hormone | Pituitary Glands | Influences metabolism |
| ADH (Anti-Diuretic Hormone) | Pituitary Glands | Regulates reabsorption of water from the kidney tubules. |
| Thyroxine | Thyroid Glands | regulates physical, mental and sexual development. |
| Thyroid Calcitonin | Thyroid Glands | controls the amount of calcium in the body. |

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| Partharmone | Parathyriod Gland | influences Ca and PH metabolism |
| Thyrimne Insulin | Thymus Gland Pancreas (Beta cells) | Formation of antibodies in children |
| Glucagon | Pancreas (Gama cells) | Increases blood sugar level |
| Somatostrain | Pancreas (Gama cells) | Controls the functioning of alpha and beta cells of Pancreas |
| Adrenaline or Ephinephrine | Adrenal Glands | Liberation of glucose from glycogen stored in liver and increases the rate of metabolim. |
| Mineralo | Adrenal Glands | Maintain electrolyte balance in the body and distribution of water to the tissue. |
| Gluco corticoids | Adrenal Glands | Influences carbohydrates metabolism and also effect protein and fat metabolism. |
| Testosterone | Testes | Responsible for male secondary sexual characters. |
| Estrogen | Ovaries | Controls the female secondary sexual characters. |
| Progesterone | Ovaries | Essential for te completion of each menstrual cycle. |
| Relaxim | Ovaries | Helps in easy birth. |

IMPORTANT DIGESTIVE ENZYMES

| Source | Enzymes | Acts on | Products |
|-----------------|--|---------------------------------|--|
| Salivary Glands | Ptyalin (Salivary Amylase) | Starch, glycogen, dextrins | Maltose, Isomaltose, 'Limit' Dextrins |
| Gastric | (i) Pepsin (Activated from Pepsinogen by HCl) (ii) Renin (Activated | Proteins, Calcium paracaseinate | paracasein and Whey Proteins Fatty Acids and Monoglycerides |

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|-------------------|---|--|---|
| | from Prorennin by HCl) (iii) Gastric Lipase | Casein Fats | Peptides |
| Pancreas | (i) Trypsin (Activated from Trypsinogen by Enterokinase) (ii) Chymotrypsin (Activated from Chymotrypsinogen by Trypsin) (iii) Pancreatic Amylase (iv) Pancreatic Lipase (v) Carboxypeptidases (Activated from procarboxypeptidases by Trypsin) (vi) DNase (vii) RNase | Proteins Proteins, Casein Starch, Glycogen, Dextrins, Emulsified fats Peptides DNA RNA RNA | Peptides Peptides, Paracasein (curd) Maltose, Isomaltose, 'Limit' Dextrins Fatty Acids, Glycerol, Monoglycerides and Triglycerides and Triglycerides Amino Acids and Dipptides Deoxyribonucleotides Ribonucleotides |
| Intestinal Glands | (i) Intestinal amylase (ii) Maltase (iii) Isomaltase (iv) 'Limit' Dextrinase (v) Invertase (Sucrase) (vi) Lactase (vii) Intestinal Lipase (viii) Nucleotidases | Starch, glycogen, dextrins Maltase Isomaltose 'Limit' Dextrins Sucrose Lactose Emulsified fats (Tri-, Di-Monoglycerides) Nucleotides Nucleosides | Maltose, Isomaltose, 'Limit' Dextrins Glucose Glucose Glucose Glucose, Fructose Glucose, Fructose Fatty Acids, Glycerol Nucleosides and Inorganic Phosphates |

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| | (ix) Nucleotidases | | Nitrogenous Bases, Pantose sugars. |
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| MAIN DISEASES | |
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| BY VIRUS | Chickenpox, Measles, Polio, Rabies, Mumps, Influenza, Hepatitis, Herpes, AIDS, Trachoma (of Cornea). |
| BY BACTERIA | Cholera, Diphtheria, Tuberculosis, Leprosy, Tetanus, Typhoid, Plague, Whooping, Cough, Sore, Throat, Pneumonia, Gonorrhoea, Syphilis, Botulism. |
| BY FUNGI | Ringworm, Athlete's foot, Dhobie itch. |
| BY PROTOZOANS | Amoebiasis, Malaria, Sleeping Sickness, Kala-azar, Diarrhoea, Giardiasis |
| BY HELMINTHES/WORMS | Filaria, Tapeworm and Hookworm transmission. |

MAJOR INVENTIONS

| Inventions | Inventor | Country |
|--------------------------|--------------------------------------|----------------|
| CT Scan | Hounsfield | Britain |
| Diesel Engine | Rudolf Diesel | Germany |
| Disc Brake | Dr.F. Lanchester | Britain |
| Disc Video | Phillips Co. | Holland |
| DNA Structure | Cricket-UK, Watson-US, Wilkins-UK | Holland |
| Dynamo | Hypolite Pixii | France |
| Electric Flat Iron | H.W. Seely | U.S.A |
| Electric Lamp | Thomas Alve Edison | U.S.A |
| Electric Motor (DC) | Zenobe Gramme | Belgium |
| Electric Motor (AC) | Nikola Tesla | U.S.A |
| Electric Iron | Henry W.Seely | U.S.A |
| Electric Washing machine | Alva J.Fisher | U.S.A |

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|------------------------|------------------------------|-------------|
| Electro-Magnet | William Sturgeon | Britain |
| Electron | Thomson J | Britain |
| Electroplating | Luigi Brugnatelli | Italy |
| Electronic Computer | Dr. Alan M. Turing | Britain |
| Fascimile Machine | Alexander Bain | Britain |
| Fibre optics | Kepany | Britain |
| Film (moving outlines) | Louis Prince | France |
| Film (talking) | J.Eng, J. Mussolle & H. Vogt | Germany |
| Film (musical sound) | Dr. Le de Forest | U.S.A |
| Microphone | Alexander Graham Bell | U.S.A |
| Microprocessor | Robert Noyce & Gordon Moore | U.S.A |
| Morcoscope, comp. | Z. Janssen | Netherlands |
| Microscope, elect. | Ruska Knoll | Germany |
| Microwave Oven | Percy Le Baron Spencer | U.S.A |
| Motor Cycle | G. Daimler | Germany |
| Movie Projector | Thomas Edison | U.S.A |
| MRI | Damadian | U.S.A |
| Neon Lamp | Georges Calcude | France |
| Neutron | Chadwick | Britain |
| Neutron bomb | Samuel Cohen | U.S.A |
| Nylon | Dr. Wallace H Carothers | U.S.A |
| Optical Fibre | Narinder Kepany | Germany |
| Paper | - | China |
| Pacemaker | Zoll | U.S.A |
| Pasteurisation | Louis Pasteur | France |

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|-----------------------------------|----------------------------------|------------|
| Pencil | Lacques-Nicolas Conte | France |
| Periodic table | Mendeleyev | Russia |
| Photocopier | Carison | U.S.A |
| Photoelectric cell | Julius Elster, Hans F Geitel | Germany |
| Photo film, celluloid | Reichenbach | U.S.A |
| Photo film, Transport | Goodwin Eastern | U.S.A |
| Photography (on metal) | J.N. Niepce | France |
| Photography (on Paper) | W.H. Fox Talbot | Britain |
| Photography (on film) | John Carbutt | U.S.A |
| Piano | Cristofori | Italy |
| Pistol, revolver | Colt | U.S.A |
| Plutonium fission | kennedy, Wnal, Seaborg, Segre | U.S.A |
| Pop-up toaster | Charles Stile | U.S.A |
| Printing Press | Johann Gutenberg | Germany |
| Printing (rotary) | Richard Hoe | U.S.A |
| Printing (Web) | William Bullock | U.S.Aqq |
| Proton | Rutherford | N. Zealand |
| Quantum Theory | Plank | Germany |
| Radar | A.H. Taylor & Leo C. Young | U.S.A |
| Radiocarbon dating | Libby | U.S.A |
| Radio Telegraphy | Dr. Mohion Ioomis | U.S.A |
| Radio Telegraphy (Trans Atlantic) | G. Marconi | Italy |
| Rayon | Sir Joseph Swan | Britain |
| Floppy disk | IBM | U.S.A |

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| Frequency Modulation (FM) | E.H. Amstrong | U.S.A |
| Frisbee | Fred Morrission | U.S.A |
| Fountain Pen | Lewis E. Waterman | U.S.A |
| Galvanometer | Andre-Marie Ampere | France |

DISCOVERIES/INVENTIONS IN MEDCINE

| Discovery/Invention | Discover/Inventor | Country |
|-----------------------------------|--------------------------|----------------|
| Adrenaline | Schafer and Oliver | Britain |
| Anesthesi, Local | Koller | Austria |
| Anesthesia, Spinal | Bier | Germany |
| Anti-toxins (Science of Immunity) | Behring & Kitasato | Germany, Japan |
| Aspirin | Dreser | Germany |
| Ayurveda | — | India |
| Bacteria | Leeuwenhock | Netherlands |
| Bacteriology | Ferdinand Cohn | Germany |
| Biochemistry | Jan Baptista Van Helmont | Belgium |
| Blood Plasma storage (Blook bank) | Drew | U.S.A |
| Blood Transfussion | Jean-Baptiste Denys | France |
| Cardiac Pacemaker | A.S. Hyman | U.S.A |
| CAT Scanner | Godfrey Hounsfield | Britain |
| Chemotherapy | Paracelsus | Switzerland |
| Choloroform as anaesthetic | James Simpson | Britain |
| Chloromycetain | Burkholder | U.S.A |
| Cholera T.B. germs | Robert Koch | Germany |
| Circulation of blood | William Harvey | Britain |

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|------------------------------|-----------------------------|-------------------|
| Cryo-Surgrey | Henry Swan | U.S.A |
| Vaccine, Meningitis | Gardon et al Connaught Lab | U.S.A |
| Vaccine, Polio | Jonas Salk | U.S.A |
| Vaccine, Polio-oral | Albert sabin | U.S.A |
| Vaccine, Rabies | Louis Pasteur | France |
| Vaccine, Smallpox | | |
| Virology | Jenner Ivanovski & Bajemick | USSR, Netherlands |
| Vitamin A | Mc Collum and M.Davis | U.S.A |
| Vitamin B1 | Minot & Murphy | U.S.A |
| Vitalmin C | Forelich Hoist | Norway |
| Vitamin D | Mc Collun | U.S.A |
| Vitamin K | Doisy Dam | U.S.A |
| Western Scientific Therapy | Hippocrates | Greece |
| Yoga | Patanjali | India |
| Diphthena germs | Klebs & Loffer | Germany |
| Electro-Cardiograph | Willem Elinthoven | Netherlands |
| Electro-ancephalogram | Hand Berger | Germany |
| Embryology | Kari Ernest-Van Baer | Estonia |
| First Test Tube Baby | Steptoe & Edwards | Britain |
| Gene Therapy of humans | Martin Clive | U.S.A |
| Genes associated with Cancer | Robert Weinberg & others | U.S.A |
| Heart Transplant Surgery | Christain Bamard | S.Africa |
| Histology | Marie Bichat | France |
| Hypodemic Syringe | Alexander Wood | Britain |
| Kidney Machine | Kolf | Netherlands |

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| Leprosy Bacillus | Hansen | Norway |
| LSD (Lysergic acid diethylamide) | Hoffman | Switzerland |
| Malaria Germs | Laveran | France |
| Reserpine | Jal Vakil | India |
| Rh-Factor | Kari Landsteiner | U.S.A |
| Serology | Paul Ehrlich | Germany |
| Sex hormones | Eugen Steniach | Australia |
| Small Pox eradicated | W.H.O. Declartion | UN |
| Stethoscope | Rene Laennec | France |
| Stretomycin | Selman Waksmsnn | U.S.A |
| Synthesis Antigens | Landsteiner | U.S.A |
| Terramycin | Finlay & Othes | U.S.A |
| Thyroxin | Edward Calvin-Kendall | U.S.A |
| Typhus Vaccine | J Nicolle | France |
| Vaccination, Mealses | Edward Jenner | Britain |
| Morphine | Enders | U.S.A |
| Neurology | Friderich Sertumer | Germany |
| Nuclear Magnetic resonance Imaging | Raymond Damadian | U.S.A |
| Open Heart Surgery | Walton Lillehel | U.S.A |
| Oral Contraceptive pills | Geogory Pincus, Rock | U.S.A |

UNITS OF MEASUREMENTS

| Quantity | Units (S.I.) | Quantity | Units(S.I.) |
|------------------|---------------------------|-------------------------|---------------------|
| Length | Metre | Viscosity | Poise |
| Time | Second | Surface tension | Newton/square metre |
| Mass | Kilogram | Heat | Joule |
| Area | Square metre | Temperature | Kelvin |
| Volume | Cubic metre | Absolute temperature | Kelvin |
| Velocity | Metre/second | Resistance | Ohm |
| Acceleration | Metre/second square | Electric current | Amphere |
| Frequency | Hertz | Magnetic induction | Gauss |
| Power | Watt | Luminous flux | Candela |
| weight | Newton or Kilogram | Intensity of sound | Decibel |
| Impulse | Newton-second | Power of lens | Diptre |
| Angular velocity | Radian/second | Depth of sea | Fathom |
| Density | Kilogram/metre cube | Electomotive force | Volt |
| Momentum | Kilogram metre/second | Electrical conductivity | Ohm/metre |
| Work | Joule | Electric energy | Kilo watt hour |
| Energy | Joule | Electric power | Kilo watt or watt |
| Force | Newton | Magnetic intensity | Orsted |
| Pressure | Pascal or Newton/sq.metre | Charge | Coulomb |

ELEMENTS, SYMBOLS AND ATOMIC NUMBERS

| Name | Symbol | Atomic Number | Name | Symbol | Atomic Number |
|------------------|---------------|----------------------|---------------------|---------------|----------------------|
| Hydrogen | H | 1 | Iron (Ferium) | Fe | 26 |
| Helium | He | 2 | Cobalt | Co | 27 |
| Lithium | Li | 3 | Nickel | Ni | 28 |
| Beryllium | Be | 4 | Copper (Cuprum) | Cu | 29 |
| Boron | B | 5 | Zinc | Zn | 30 |
| Carbon | C | 6 | Germanium | Ge | 32 |
| Nitrogen | N | 7 | Bromine | Br | 35 |
| Oxygen | O | 8 | Krypton | Kr | 36 |
| Flourine | F | 9 | Zirconium | Zr | 40 |
| Neon | Ne | 10 | Silver | Ag | 47 |
| Sodium (Natrium) | Na | 11 | Tin (Stannum) | Sn | 50 |
| Magnesium | Mg | 12 | Antimony (Stabnum) | Sb | 51 |
| Aluminium | Al | 13 | Iodine | I | 53 |
| Silicon | Si | 14 | Barium | Ba | 56 |
| Phosphorous | P | 15 | Gold (Aurum) | Au | 79 |
| Sulphur | S | 16 | Mercury (Hydragrum) | Hg | 80 |
| Chlorine | Cl | 17 | Lead (Plumbum) | Pb | 82 |
| Argon | Ar | 18 | Bismuth | Bi | 83 |
| Potassium | k | 19 | Radium | Ra | 88 |

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| (kallum) | | | | | |
| Calcium | Ca | 20 | Thorium | Th | 90 |
| Titanium | Ti | 22 | Uranium | U | 92 |
| Vanadium | v | 23 | Plutonium | Pu | 94 |
| Chromium | Cr | 24 | Curium | Cm | 96 |
| Magnanese | Mn | 25 | | | |

ORES OF METALS

| Name of the elements | Ores |
|----------------------|---|
| Aluminium (A) | (a) Baxuit, (b) Corundum, (c) kryolite |
| Iron (Fe) | (a) Haematite, , (b) Magnetite, , (c) Iron pyrite, (d) Siderite |
| Copper (Cu) | (a) Copper Pyrite, (b) Copper Glance, (c) Malachite |
| Zinc (Zn) | (a) Zinc Blende, (b) Calamine |
| Sodium (Na) | (a) Rock Salt, (b) Sodium Carbonate, (c) Syvanite |
| Mercury (Hg) | (a) Cinnabar, (b) Calomal |
| Calcium (Ca) | (a) Dolomite, (b) Karmalite |
| Phosphorous (P) | (a) Lime Stone, (b) Dolomite |
| Potassium (K0 | (a) Phosphorite, (b) Floreapetite |
| Lead (Pb) | (a) Galena, (b) Anglestite |
| Tin (Sn) | (a) Tin Pyrites, (b) Cassiterite |
| Silver (Ag) | (a) Silver Glance, (a) Calverite |

COMMON AND CHEMICAL NAMES OF SOME COMPOUNDS

| Common Name | Chemical Name | Chemical Formules |
|---------------------|------------------------------|---|
| Dry Ice | Solid Carbondioxide | CO ₂ |
| Slaked Lime | Calcium Hydroxide | Ca(OH) ₂ |
| Bleaching powder | Calcium Oxychloride | CaOCl ₂ |
| Nausadar | Ammonium Chloride | NH ₄ Cl |
| Caustic Soda | Sodium Hydroxide | NaOH |
| Rock Salt | Sodium Chloride | NaCl |
| Caustic Potash | Potassium Alumminum Sulphate | KOH |
| Potassium Hydroxide | Potashn Alum | K ₂ SO ₄ .Al ₂ (SO ₄) ₃ .24H ₂ O |
| Epsom | Magnesium Sulphate | MgSO ₄ .7H ₂ O |
| Quick Lime | Calcium Oxide | CaO |
| Plaster of Paris | Calcium Sulphate | (CaSO ₄)1/2 H ₂ O |
| Vermelium | Mercuric Sulphide | HgS |
| Borax | Borax | Na ₂ B ₄ O ₇ .10H ₂ O |
| Alcohol | Ethyl Alcohol | C ₂ H ₅ OH |
| Sugar | Surcose | C ₁₂ H ₂₂ O ₁₁ |
| Heavy Water | Duterium Oxide | D ₂ O |
| Globar's Salt | Sodium Sulpose | Na ₂ SO ₄ .10H ₂ O |
| T.N.T | Tri Nitrotoluene | C ₆ H ₂ CH ₃ (NO ₂) ₃ |
| Calomel | Mercurous Chloride | HgCl |
| Sand | Silicon Oxide | SiO ₂ |
| Gypsum | Calcium Sulphate | CaSO ₄ .2H ₂ O |
| Green Vitriol | Ferroun Sulphate | FeSO ₄ .7H ₂ O |
| Mohr's Salt | Ammonium Ferrous Sulphate | FeSO ₄ (NH ₄) ₂ SO ₄ .6H ₂ O |

| | | |
|----------------|---------------------|---|
| Blue Vitriol | Copper Sulphate | $\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$ |
| White Vitriol | Zinc Sulphate | $\text{ZnSO}_4 \cdot 7\text{H}_2\text{O}$ |
| Marsh Gas | Methane | CH_4 |
| Vinegar | Acetic Acid | CH_3COOH |
| Patash Ash | Potassium Carbonate | K_2CO_3 |
| Hypo | Sodium Thiosulphate | $\text{Na}_2\text{S}_4\text{O}_3 \cdot 5\text{H}_2\text{O}$ |
| Baking Powder | Sodium Bicarbonate | NaHCO_3 |
| Washing Soda | Sodium Carbonate | $\text{Na}_2\text{CO}_3 \cdot 10\text{H}_2\text{O}$ |
| Magnesia | Magnesium Oxide | MgO |
| Chalk (Marble) | Calcium Carbonate | CaCO_3 |
| Lunar Caustic | Silver Nitrate | AgNO_3 |
| Laughing Gas | Nitrous Oxide | N_2O |
| Chloroform | Trichloro Methane | CHCl_3 |