Competitive Exams: Glossary of Terms

- Nutrition: The study of food.
- Basic Nutrients: The 7 basic food substances that are: Carbohydrates, Fats
- Proteins, Vitamins, Minerals, Fibre and Water.
- Carbohydrates: 1 of the bulk material of which food is made of. An organic substance from which the body gets energy.
- Fats: Made up of fatty acids and glycerol; another bulk material found in food.
- Proteins: Substances made up of carbon, hydrogen, oxygen, nitrogen and sometimes sulphur. Used for growth and repair or tissue.
- Vitamins: Organic substances needed in small amounts by the body. Some are coenzymes and other help to prevent illnesses.
- Minerals: Important substances needed in small quantities to prevent illnesses.
- Fibre: An insoluble, non-digested substance used to sweep out undigested food out of the body; roughage
- Water: Very important chemical; the most abundant compound in the Universe and in the body.
- Sugars: Carbohydrates used to get energy.
- Glucose: C6H12O6 Final product of digestion of carbohydrates.
- Fructose: A sugar found in fruit.
- Sucrose: Table sugar.
- Lactose: Found in milk.
- Maltose: Found in barley grains.
- Starch: Found in bread, potatoes, rice and cereals. A chemical used by plants to store food; an insoluble polysaccharide.
- Monosaccharides: Sugar with one glucose molecule. Fructose is also a monosaccharides.

- Disaccharides: Sugars with more than one glucose molecule attached together by bonds.
- Polysaccharide: Three or more sugar molecules are bonded together; insoluble.
- Glycogen: The chemical used by animals to store food.
- Glycerol: Part of the fat molecule.
- Fatty acid: There are 3 fatty acids in a fat molecule.
- Amino Acid: The final product of digestion of proteins.
- Peptide bonds: The bond by which amino acids are attached.
- Dipeptide: 2 amino acids attached together by peptide bonds.
- Polypeptides: 3 or more amino acids attached together by peptide bonds.
- Peptide Bonds: Bonds attaching amino acids together to form dipeptides and polypeptides.
- Foods rich in Protein: Meat, eggs, nuts.
- Urine: The body's excretorial waste.
- Calcium: Found in Milk, cheese, mineral water; used for growth and repair of bone and cartilage tissue. Prevents rickets; malformed bones.
- Iron: Found in tomatoes, liver and kidneys. Part of haemoglobin in rbc. Prevents anaemia (tiredness, headaches) .
- Phosphorous: Found in many foods; important for bones and teeth.
- Sodium: Found in salt. Prevents cramps.
- Iodine: Found in sea food, and drinking water. Helps to prevent goitre.
- Vitamin A: Found in liver and carrots. Prevents night blindness (exophthalmia) .
- Vitamin D: Found in fish liver oil. Prevents richets.
- Vitamin E: Found in milk, egg yolk, lettuce. Prevents sterility.
- Vitamin K: Found in cabbage, spinach, fish liver. Important for blood coagulation.
- Fat soluble Vitamins: Vitamins A, D, E, K.
- Water Soluble Vitamins: Vitamins B1, B2, B6, C.
- Vitamin B1: Found in Pork, eggs, leafy green vegetables. Prevents beriberi (weakness, irregular heartbeat, partial paralysis)
- Vitamin B2: Found in liver, milk, dark green vegetables. Prevents Skin lesions.

- Niacin (B6) : Found in liver, poultry, canned tuna. Prevents pellagra (metal confusion, diarrhoea)
- Vitamin C: Found in citrus fruit. Prevents Scurvy (bleeding gums) .
- Enzymes: Biological catalysts.
- Denatured: Proteins like enzymes get denatured by heat (loses its properties) .
- Substrate: The food on which an enzyme acts.
- Active site: Where the substrate enters.
- Products: The substances released by the enzymes after the reaction is completed.
- Biological Washing Powders: Washing powders that contain enzymes.
- Protease: An enzymes used for tenderising meat.
- Amylase: Found in saliva and duodenum. Used in industry to convert starch to sugars to make syrups and juices.
- Cyanide: Enzyme inhibitor.
- Arsenic: Enzyme inhibitor.
- Incisors: Teeth adapted for cutting food.
- Canines: For holing and tearing.
- Premolars: For chewing and grinding food.
- Molars: For chewing and grinding food.
- Crown: The upper part of the tooth.
- Root: The lower part of the tooth.
- Dental Caries: Tooth decay.
- Cusps: ‘hills’ on the teeth of carnivores and omnivores.
- Saprophytic: When saprophytic organisms such as fungi and some bacteria that feed on dead decaying matter. Saprophytes are useful to the environment because they recycle nutrients.
- Parasitic: When parasitic organisms feed on or in another organism harming it.
- Holozoic (heterotrophic) : Animals feed heterotrophically, because they must search for their food. Herbivores eat vegetable matter and have special bodily structures to help them digest cellulose. Carnivores eat meat and are usually predators. Omnivores, such as humans eat both meat and vegetable matter.

- Holophytic (autotrophic) : Plants feed with this type of feeding. They are able to make their own food by photosynthesis.
- Ingestion: Food is ate, chewed and mixed with saliva.
- Digestion: Begins from the mouth by salivary amylase (starch-breaking enzyme) and continues till the duodenum, were enzymes chemically break down food into simpler soluble products, stage by stage, and prepare nutrients for absorption.
- Absorption: The blood absorbs soluble products.
- Assimilation: The nutrients are then assimilated (taken to) various organs around the body.
- Defecation (Egestion) : Undigested matter such as fiber is egested (moved out) of the body (Do not mix excretion with egesting or defecation. Excretion is the removal of waste products made by chemicals reaction within the cells; e. g. Excreting urine) .
- Physical digestion: Teeth to increase surface area for enzyme action to break down food.
- Chemical digestion: Food is mixed with saliva and salivary amylase breaks down some starch from the food (if there is) into maltose. The chemical digestion continues till the duodenum.
- Lysozyme: Chemical found in the saliva used to kill bacteria.
- Oesophagus: Gullet.
- Pepsinogen: An inactive form of pepsin that is then activated by the hydrochloric acid.
- Pepsin: Digestive enzyme, which breaks down proteins into smaller polypeptides.
- Mucus: Protects the stomach from being digested by the enzymes.
- Hydrochloric acid (HCl acid) : Kills bacteria and provides and acidic pH for pepsin to work.
- From the intestinal wall: Mainly five enzymes are produced:
- Trypsin: Breaks down polypeptides into dipeptides.
- Maltase: Breaks down maltose into glucose.
- Lipase: Breaks down fates (lipids) into fatty acids and glycerol.
- Peptidases: Breaks down dipeptides into amino acids
- Sucrase: Breaks down sucrose into glucose
- From the pancreas mainly 4 chemicals are produced:

- Sodium hydrogen carbonate ($NaHCO_3$) : Neutralizes acids from the stomach and provides alkaline pH in the duodenum.
- Trypsin: Breaks down starch into maltose.
- Pancreatic amylase: Breaks down starch into maltose.
- Lipase: Breaks down fats into fatty acids and glycerol.
- Liver: The largest and very important internal organ found in the body. Among its functions, it produces bile, breaks down drugs and alcohol, and converts the final products of digestion into glycerol for storage. The liver cells help the blood to assimilate food substances and to excrete waste materials and toxins, as well as products such as steroids, oestrogen, and other hormones. The liver also stores iron, vitamin A, many of the B-complex vitamins, and vitamin D.
- Detoxification: One of the functions of the liver, where the liver breaks down drugs.
- Deamination: The destruction of red blood cells so that the body forms new ones.
- This function is carried out by the liver, in fact, the liver is a source of iron.
- Duodenum: The first part of the small intestine. It continues digestion of food and it receives enzymes from the intestinal wall and from the pancreas. It receives bile that the liver produced from the gall bladder.
- Gall Bladder: An organ used to store bile.
- Bile: A green chemical used for emulsification.
- Emulsification: The process by which bile does detergent action on lipids. Fat molecules are too large to be absorbed by the blood so it is broken down into smaller molecules by the bile.
- Hepatic Artery: The artery that gives blood from the heart to the liver.
- Hepatic Portal Vein: The vein that transports blood rich in soluble products of digestion from the ileum to the liver.
- Hepatic Vein: The vein that transports blood from the liver to the heart.
- Ileum: A long part of the gut where digestion stops and absorption starts.
- Absorption is done by the villi surrounding its walls. It ends in the large intestine.
- Villi: Small structures found on the walls of the ileum where absorption stakes place. There are millions of them to ensure that all nutrients have been absorbed.
- Microvilli: Even smaller villi on the large villi in the ileum.
- Mucus-Secreting Cell: Cells present in the trachea, nose, stomach wall, the intestinal wall and on the epithelium of the villi, also called goblet cells.

- Epithelium: The first thin layer of cells of the villi and other small structures in the body.
- Lacteal: The structure found in the villi that absorbs fat droplets.
- Venule: The vein that carries amino acids and monosaccharides. They are found in the villi.
- Arteriole: The vein that transports blood in the villi.
- Appendix: A vestigial organ located the between the ileum and colon.
- Caesium: Another vestigial organ located near the appendix.
- Vestigial Organ: An organ that has no known functions. Vestigial organs found in the body are the caesium and the appendix. Ancient human beings who ate mainly vegetable matter probably used these organs. Then, by evolution, these organs ceased from being used. They were home to cellulose-digesting bacteria.
- Large Intestine: Part of the alimentary canal. It is dividing into the colon and rectum.
- Colon: The first part of the large intestine where water and fluid are absorbed. It ends in the rectum.
- Herbivores: Vegetable eating animals.
- Ruminants: Herbivores with a special type of stomach called a rumen.
- Cellulose: A cellulose-digesting enzyme produced by certain bacteria found in herbivores.
- Mutualistic Relationship: A type of relationship between organisms where both animals are benefiting from each other. An example of such relationships is the relationship between the cellulose-digesting bacteria in the caesium and appendix of ruminants.
- Rumen: A large stomach with 3 compartments found in ruminants.
- Regurgitation: Ruminants bring the food they have already eaten and swallowed back to their mouth to continue chewing it.
- Respiration: A chemical reaction catalysed by enzymes where (in case of aerobic respiration) oxygen combines with glucose to form carbon dioxide, water and energy.
- Aerobic: A type of respiration where oxygen is involved.
- Anaerobic: A type of respiration that does not involve oxygen and doesn’t produce as much energy as aerobic respiration.
- Mitochondria/Mitochondrion: An organelle found in all cells that do respiration.

- Gas exchange: The process where oxygen is absorbed by the blood and carbon dioxide is exhaled out of the body. don't mix gas exchange with respiration.
- Respiration is a chemical reaction while gas exchange is just the exchange of gases.
- Organic Molecules: Molecule containing carbon.
- Alcoholic Fermentation: A type of anaerobic respiration where alcohol is a product of the chemical reaction.
- Lactic Acid: An acid produced in muscle tissues during strenuous exercise when there is lack of oxygen.
- Oxygen Dept: When lactic acid is produce, a state called oxygen debt occurs, when after exercise the body continues breathing heavily so re gain all the oxygen needed by the muscle cells to break down lactic acid in carbon dioxide and water.
- Aerobic respiration: A type of respiration where oxygen is involved. An example of this type of respiration is alcoholic fermentation.
- Lungs: Major organs in some animals needed for gas exchange.
- Trachea: Otherwise called windpipe. The second pipe from where air passes and is filtered by cilia and mucus secreting cells. Rings of cartilage to make it stiff surround this structure and so that it doesn't get bent.
- Bronchus: One of the pipes from which air passes before going inside the lungs.
- There are two bronchi and they are attached to the trachea. Rings of cartilage to make it stiff surround these structures.
- Alveoli: Also called air sacks. The place where the actual gas-exchange takes place. Tiny structures surrounded by many blood vessels to ensure that gas exchange takes place rapidly and efficiently.
- Pleural Membrane: A thin membrane that covers the inside of the ribs and the outside of the lungs. A film of moisture between the two layers lets them slide easily over each other as the lungs move.
- Intercostals: Muscles between they ribs that contract and relax during inhalation and exhalation.
- Inhalation: Breathing in:
- Exhalation: Breathing out:
- Breathing: A series of movements made by intercostals, the rib cage and pectorals to enable the air to get into the lungs. These movements are shown here in this diagram.
- Ribs: Bones surrounding the lungs.
- Bronchioles: Small pipes from which air passes. These are found inside the lungs.

- Pulmonary Vein/Artery: Blood vessels from which blood passes from and into the heart. They are connected to the lungs and the heart.
- Diaphragm: A muscle present only in mammals to ease inhalation and exhalation. This muscle is found under the lungs.
- Plasma: Part of the fluid in blood.
- Hydrogen carbonate ions: Carbon dioxide is transported in the blood by this ion.
- Blood capillaries: Very, very small blood vessels that surround alveoli. They are very thin and tender and are found in many other places in the body.
- Tar: A chemical found in cigarettes.
- Carbon monoxide: A poisonous gas released by lightened cigarettes.
- Nicotine: Colourless, oily, liquid alkaloid, $C_{10}H_{14}N_2$ that constitutes the principal active chemical constituent of tobacco.
- Epithelium: A layer of cells that serves as a protective covering over a surface, such as the outside of an organ or the lining of a cavity wall in the body.
- Goblet Cells: Mucus secreting cells.
- Diseases caused by smoking: Bronchitis, Emphysema and Lung Cancer
- Other lung Diseases: Pneumonia, TB (Tuberculosis) and Dust Diseases.
- Poisonous gases in the air: Carbon monoxide, sulphur dioxide, nitrogen dioxide, ozone.