

Glossary of key terms for O Level Biology

Word	Definition
Diffusion	Net movement of molecules from a region of their higher concentration to a region of their lower concentration, down a concentration gradient
Osmosis	Movement of water molecules from a region of higher water potential to a region of lower water potential, across a partially permeable membrane
Water potential	A measure of the tendency of water to move from one place to another
Concentration gradient	Difference in concentration between two regions
Plasmolysis	Shrinking of cytoplasm away from the cell wall when the plant cells are immersed in a solution more concentrated than their cell sap
Turgor pressure	Pressure exerted outwards on the plant cell wall due to the water in the cell, giving the cell its turgidity.
Active transport	Process in which energy from respiration is used to move molecules against a concentration gradient, from a region of lower concentration to a region of higher concentration
Condensation reaction	A chemical reaction in which two simple molecules are joined together to form a larger molecule with the removal of one molecule of water
Hydrolysis	A chemical reaction in which water molecule is needed to break up a complex molecule into smaller molecules
Reducing sugars	Sugars which can reduce the copper (II) to copper (I) E.g. glucose, maltose, fructose, lactose
Saturated fats	Fats with straight fatty acid chains and are found mostly in animals
Unsaturated fats	Fats with bent fatty acid chains and are found mostly in vegetables
Emulsion	A suspension of small drops of a liquid in another liquid
Kwashiorkor	Protein-deficiency disease in which children have swollen stomachs and dry, scaly skin
Enzymes	Biological catalysts made with proteins which alter the rate of chemical reactions without themselves being chemically changed at the end of the reactions
Activation energy	Energy needed to start a chemical reaction
Active site	Depression on the surface of an enzyme molecule into which the substrate molecule can fit

Word	Definition
Optimum temperature	Temperature at which enzyme is most active, catalysing the largest number of reactions per second
Optimum pH	pH value at which enzyme is most active, catalysing the largest number of reactions per second
Denaturation	Change in the three-dimensional structure of an enzyme or any other soluble protein, caused by heat or extreme pH changes
Limiting factor	Any factor that directly affects a process if its quantity is changed
Peristalsis	Rhythmic wave-like contractions of the wall of the gut caused by alternate contractions of the circular and longitudinal muscles in the walls to help push food along the gut
Emulsification of fats	Occurs when bile break big blobs of fat into smaller fat droplets
Egestion	Removal of undigested food from the body
Deamination	Process of removing amino groups from excess amino acids and converted to urea
Detoxification	Process of converting harmful substances into harmless substances
Cirrhosis of the liver	Disease where liver cells are destroyed and are replaced with fibrous tissue
Photosynthesis	Process in which light energy absorbed by chlorophyll is transformed into chemical energy. This chemical energy is used to synthesize carbohydrates from water and carbon dioxide, with oxygen being released during the process.
Compensation point	Point when rate of photosynthesis is the same as rate of respiration
Antigen	Protein found on the surface of red blood cells which can be recognised by the immune system
Antibody	A protein produced by lymphocytes in response to the entry of foreign substances in order to render them harmless
Pathogen	Disease-causing organism
Acclimatisation	Occurs when body produces more red blood cells to compensate for a lower concentration of oxygen in the atmosphere
Phagocytosis	Process of engulfing and ingesting foreign particles by white blood cells/phagocytes
Blood serum	Blood plasma without fibrin and blood clotting factors

Word	Definition
Double circulation	Consists of pulmonary circulation and systemic circulation where blood passes through the heart twice in one complete circuit
Ventricular systole	Occurs when ventricles contract
Ventricular diastole	Occurs when ventricles relax
Blood pressure	Force that blood exerts on the walls of blood vessels
Tissue fluid	Blood plasma that has moved out of blood capillaries to the surrounding tissue cells
Atherosclerosis	Deposition of fatty substances on the inner surface of an artery
Thrombosis	A blood clot that forms in an artery
Translocation	Transport of manufactured food substances such as sugars and amino acids in the phloem of plants
Root pressure	Pressure that forces water, absorbed from soil, to move through the roots and up the stem of a plant. This is normally due to the lower water potential in root cells
Transpiration	Loss of water vapour from aerial parts of a plant, especially through the stomata of leaves
Transpiration stream	Stream of water up a plant
Wilting	Condition which results when plants lose more water through transpiration than is absorbed from roots
Respiration	Oxidation of food substances with the release of energy in living cells
Aerobic respiration	Oxidation of food substances in living cells, in the presence of oxygen, with the release a large amount of energy. Carbon dioxide and water are released as waste products.
Anaerobic respiration	Breakdown of food substances in the absence of oxygen. Less energy is released than aerobic respiration.
Oxygen debt	Amount of oxygen required to oxidise lactic acid produced in muscles during anaerobic respiration
Gaseous exchange	Exchange of gases between an organism and the environment
Inhalation / inspiration	Taking in of air
Exhalation / expiration	Giving out of air

Word	Definition
Cancer	An uncontrolled division of cells producing outgrowths or lumps of tissues
Excretion	Process by which metabolic waste products and toxic materials are removed from the body of an organism
Ultrafiltration	Process in which hydrostatic pressure causes water and small dissolved substances and ions to move across the capillary wall into the nephron tubule
Osmoregulation	Control of water and solute levels in the blood to maintain a constant water potential in the body
Homeostasis	Maintenance of a constant internal environment
Stimulus	A change from the normal condition
Receptors	Organs in the body that detect changes in body conditions
Negative feedback	Reverse effect of a stimulus to restore the normal conditions of the internal environment
Vasoconstriction	Reduction in internal diameter of blood vessels in body to reduce the amount of blood flow
Vasodilation	Increase in internal diameter of blood vessels in body to increase amount of blood flow
Response (to a stimulus)	Reaction of an organism to a stimulus
Effectors	Organs or cells in the body that produce a response when stimulated by a nerve impulse
Synapse	Junction between two neurones or a junction between a neurone and an effector
Nerve impulse	Electrochemical signal
Neurotransmitters	Chemicals which transmit nerve impulses across a synapse
Reflex action	Immediate response to a specific stimulus without conscious control
Voluntary action	Action that is controlled by conscious thought
Involuntary action	Action that is not under the control of will of an individual
Reflex arc	Shortest pathway by which nerve impulses travel from the receptor to the effector in a reflex action

Word	Definition
Sense organs	Receptors which receive stimuli and inform the body of changes in the environment
Cones (in eye)	Photoreceptors which enable colour vision in bright light
Rods (in eye)	Photoreceptors which enable vision in dim light
Pupil reflex	Response of the pupil to different light intensities
Antagonistic muscles	Muscles which behave in opposing actions. When one set of muscles contracts, the other relaxes and vice versa.
Focusing	Adjustment of the lens of the eye so that clear images of objects at different distances are formed on the retina
Focal length	Distance between middle of lens and the point of focus on the retina
Hormones	Chemical substance produced in minute quantities by an endocrine gland and is transported in the bloodstream to target organ(s) where it exerts its effects
Endocrine glands	Ductless glands that secrete hormones directly into the bloodstream
Diabetes mellitus	Disease in which blood glucose concentration cannot be controlled within normal limits, usually due to low insulin production or failure of target cells to respond too insulin
Asexual reproduction	Process resulting in the production of genetically identical offspring from one parent, without the fusion of gametes
Gametes	Reproductive cells containing half the number of chromosomes as the normal body cell, also known as sex cells
Sexual reproduction	Process involving the fusion of a male gamete and a female gamete to form a zygote, resulting in the production of genetically dissimilar offspring
Fertilisation	Process by which female gamete fuses with a male gamete to form a zygote
Pollination	Transfer of pollen grains from anther to stigma of a flower
Self-pollination	Transfer of pollen grains from anther to stigma of same flower or of a different flower on the same plant
Cross-pollination	Transfer of pollen grains from anther to stigma of a flower in another plant of the same species
Endosperm	Nutritive tissue which surrounds the developing embryo in a seed (from a flowering plant)

Word	Definition
Gonads	Reproductive organs in which gametes are produced
Diploid	A nucleus, cell or organism with two sets of chromosomes present, one from the female parent and the other from the male parent. (2n)
Haploid	A nucleus, cell or organism with a single set of unpaired chromosomes (n)
Puberty	Stage of human growth and development in which a person becomes physically mature
Menopause	Stage of a female's life in which eggs production and menstrual cycle stops
Implantation	Embedding of a fertilised egg into the wall of the uterus where it will continue its development
Acquired Immune Deficiency Syndrome (AIDS)	Sexually transmitted disease caused by human immunodeficiency virus which acts by destroying the immune system
Mitosis	A form of nuclear division in which the daughter nuclei produced contain the same number of chromosomes as the parent nucleus
Meiosis	A form of nuclear division in a single cell divides twice to produce haploid daughter nuclei, each containing half the number of chromosomes as the parent nucleus
Homologous chromosomes	A pair of chromosomes, one from each parent, which have the same chromosomal length, centromere position, gene sequence and loci, but may contain different alleles
Synapsis	The pairing up of homologous chromosomes at the start of prophase 1 of meiosis
Crossing over	An exchange of genetic material between non-sister chromatids of homologous chromosomes, resulting in recombinant chromosomes
Chromosome	Threadlike structures made of DNA which carry genes determining the characteristics of an individual, found in the nucleus of eukaryotic cells
Gene	A small segment of DNA in a chromosome where specific hereditary information is stored, and codes for the synthesis of a single polypeptide
Alleles	Different forms of a gene which occupy the same relative positions on a pair of homologous chromosomes
Dominant allele	A form of a gene that expresses itself and give the same phenotype in both the homozygous and heterozygous conditions

Word	Definition
Recessive allele	A form of a gene that expresses itself only in the homozygous condition
Phenotype	The observable characteristic of an organism
Genotype	Genetic composition of an organism, i.e. the combination of alleles it possesses
Homozygous	An organism who has identical alleles for a particular trait. Eg. TT or Tt
Heterozygous	An organism who has unlike alleles for a particular trait. Eg. Tt
Codominance	Condition which arises when both alleles in a heterozygous organism are dominant and are fully expressed in the phenotype
Mutation	The sudden or spontaneous change in gene structure or a chromosome, or chromosome number, and may be inheritable
Mutagen	A physical, chemical or biological agent that causes mutation by altering the genetic material
Continuous variation	Range of differences that can be observed in many characteristics in a population. It is brought about by combined effects of many gene and can be affected by environment.
Discontinuous variation	Clearly defined differences in a characteristic that can be observed in a population. It is usually controlled by only one or a few genes and is not affected by the environment.
Natural selection	Process which results in the best adapted organisms in a population surviving to reproduce
Codon	Triplet of nucleotides within a molecule of messenger RNA that functions as a unit of genetic coding, usually by specifying a particular amino acid during the synthesis of proteins in a cell
Transcription	Process where message stored in template DNA is copied to an mRNA molecule
Translation	Process which uses the message stored in the mRNA to make a protein molecule
Genetic engineering	A technique used to transfer genes from one organism to another
Vector	Another DNA molecule that is used to carry the genes of one organism into another
Plasmid	Circular DNA found in bacteria
Recombinant plasmid	Circular DNA from bacteria that contains a foreign gene

Word	Definition
Transgenic organism	Any organism which acquires a foreign gene, and a result of genetic engineering
Habitat	Place where an organism lives and carries out all its activities such as feeding and reproduction
Population	Group of organisms of the same species living and reproducing in a particular habitat
Community	All populations of organisms living and interacting with one another under the same environmental conditions
Ecosystem	Formed by the interaction between communities of living organisms and their abiotic environment
Producers	Mainly green plants that can convert light energy into chemical energy in the form of glucose through photosynthesis
Consumers	Organisms which obtain their energy and nutrients from the organisms they feed on
Decomposers	Organisms feeding on and breaking down dead organisms as well as waste matter into simple inorganic substances which are returned to the non-living environment
Food chain	A series of organisms through which energy is transferred in the form of food from organism to organism along a feeding pathway
Food web	Complex feeding relationship in a community where two or more food chains are linked together
Trophic level	A feeding stage in a food chain
Pyramid of numbers	Represents the number of organisms present in each trophic level of a food chain at a particular time
Pyramid of biomass	Represents the total dry mass of organisms present in each trophic level at a particular time
Pyramid of energy	Represents the rate of energy flow in a food chain over a period of time
Deforestation	Clearing of large areas of forests
Eutrophication	Process in which a body of water is polluted with an abundant supply of sewage or fertilisers, resulting in an accelerated algal growth
Bioaccumulation	A build-up of non-biodegradable chemicals, such as pesticides, within an organism as the chemical is absorbed faster than it can be removed

Word	Definition
Bioamplification	An increase in the concentration of non-biodegradable chemicals, such as pesticides, along a food chain
Conservation	The protection and preservation of natural resources in the environment
Biodiversity	Range of species that are present in a particular ecosystem
Reforestation	Planting of forests to replace trees that have been removed or destroyed
Carbon sink	Anything that absorbs carbon dioxide more than it releases