IGCSE Biology key definitions

These are the definitions as the 0610 syllabus words them. Mark schemes reward the key words, so learn them exactly.

Classification, cells and transport

Species	A group of organisms that can reproduce to produce fertile offspring.
Binomial system	An internationally agreed system in which the scientific name of an organism is made up of two parts showing the genus and species.
Diffusion	The net movement of particles from a region of their higher concentration to a region of their lower concentration (down a concentration gradient), as a result of their random movement.
Osmosis	The net movement of water molecules from a region of higher water potential (dilute solution) to a region of lower water potential (concentrated solution), through a partially permeable membrane.
Active transport	The movement of particles through a cell membrane from a region of lower concentration to a region of higher concentration (against a concentration gradient), using energy from respiration.
Catalyst	A substance that increases the rate of a chemical reaction and is not changed by the reaction. Enzymes are proteins that are biological catalysts.

Nutrition and transport

Photosynthesis	The process by which plants synthesise carbohydrates from raw materials using energy from light.
Physical digestion	The breakdown of food into smaller pieces without chemical change to the food molecules.
Chemical digestion	The breakdown of large insoluble molecules into small soluble molecules.
Transpiration	The loss of water vapour from leaves.
Translocation	The movement of sucrose and amino acids in phloem from sources to sinks.
Circulatory system	A system of blood vessels with a pump and valves to ensure one-way flow of blood.

Disease, respiration and excretion

Pathogen	A disease-causing organism.
Transmissible disease	A disease in which the pathogen can be passed from one host to another.
Aerobic respiration	The chemical reactions in cells that use oxygen to break down nutrient molecules to release energy.
Anaerobic respiration	The chemical reactions in cells that break down nutrient molecules to release energy without using oxygen.
Deamination	The removal of the nitrogen-containing part of amino acids to form urea.

Coordination and response

Reflex action	A means of automatically and rapidly integrating and coordinating stimuli with the responses of effectors (muscles and glands).
Synapse	A junction between two neurones.
Hormone	A chemical substance, produced by a gland and carried by the blood, which alters the activity of one or more specific target organs.
Homeostasis	The maintenance of a constant internal environment.
Gravitropism	A response in which parts of a plant grow towards or away from gravity.
Phototropism	A response in which parts of a plant grow towards or away from the direction of the light source.

Reproduction and inheritance

Asexual reproduction	A process resulting in the production of genetically identical offspring from one parent.
Sexual reproduction	A process involving the fusion of the nuclei of two gametes to form a zygote and the production of offspring that are genetically different from each other.
Fertilisation	The fusion of the nuclei of gametes.
Pollination	The transfer of pollen grains from an anther to a stigma.
Gene	A length of DNA that codes for a protein.
Allele	An alternative form of a gene.
Haploid / diploid nucleus	A nucleus containing a single set / two sets of chromosomes.
Inheritance	The transmission of genetic information from generation to generation.
Genotype	The genetic make-up of an organism in terms of the alleles present.
Phenotype	The observable features of an organism.
Dominant allele	An allele that is expressed if it is present in the genotype.
Recessive allele	An allele that is only expressed when there is no dominant allele of the gene present in the genotype.
Codominance	A situation in which both alleles in heterozygous organisms contribute to the phenotype.
Gene mutation	A random change in the base sequence of DNA.

Variation and ecology

Adaptive feature	An inherited feature that helps an organism to survive and reproduce in its environment.
Adaptation	The process, resulting from natural selection, by which populations become more suited to their environment over many generations.
Producer / consumer	An organism that makes its own organic nutrients, usually using energy from sunlight through photosynthesis / an organism that gets its energy by feeding on other organisms.
Decomposer	An organism that gets its energy from dead or waste organic material.
Trophic level	The position of an organism in a food chain, food web or ecological pyramid.
Population	A group of organisms of one species, living in the same area, at the same time.
Ecosystem	A unit containing the community of organisms and their environment, interacting together.
Biodiversity	The number of different species that live in an area.

Equations to know

Photosynthesis: carbon dioxide + water → glucose + oxygen (light energy, chlorophyll) · $6CO_2 + 6H_2O \rightarrow C_6H_{12}O_6 + 6O_2$
Aerobic respiration: glucose + oxygen → carbon dioxide + water · $C_6H_{12}O_6 + 6O_2 \rightarrow 6CO_2 + 6H_2O$
Anaerobic respiration: in muscles glucose → lactic acid; in yeast glucose → alcohol (ethanol) + carbon dioxide · $C_6H_{12}O_6 \rightarrow 2C_2H_5OH + 2CO_2$
Magnification = image size ÷ actual size (use the same units; 1 mm = 1000 µm)

Self-test (answers at the bottom)

1. Define osmosis.
2. What is the difference between a gene and an allele?
3. A cell is 0.05 mm long and its drawing is 50 mm long. What is the magnification?
4. Name the products of anaerobic respiration in yeast.

5. Define homeostasis.
6. A plant shoot grows towards light. Name the response.

Answers: 1. See the definition above (water potential, partially permeable membrane). 2. A gene is a length of DNA coding for a protein; an allele is an alternative form of that gene. 3. × 1000. 4. Alcohol (ethanol) and carbon dioxide. 5. The maintenance of a constant internal environment. 6. Positive phototropism.