

Definitions and Concepts for CAIE Biology IGCSE

Topic 1: Characteristics and Classification of Living Organisms

*Definitions in **bold** are for supplement only*

Amino acids - Small molecules from which proteins are synthesised.

Amphibia - A class of vertebrates - including frogs, toads and newts - that are poikilothermic. They have four limbs, of which hind feet are often webbed. Amphibia have lungs and moist skin for breathing. They reproduce sexually via external fertilisation.

Animal (kingdom) - A biological kingdom consisting of multicellular organisms that do not have a cell wall or chloroplasts. They ingest and digest food for energy.

Arachnids - A class of arthropods including spiders, scorpions, ticks and mites. Arachnids have a segmented body (divided into the cephalothorax and abdomen), four pairs of jointed legs and several pairs of simple eyes.

Arthropods - A phylum consisting of invertebrate animals with jointed limbs, segmented bodies and a hard external skeleton (cuticle). Arthropods include crustaceans, myriapods, arachnids and insects.

Binomial system - A universal system for naming organisms using their genus and species.

Birds - A class of vertebrates that are homoiothermic. Birds have four limbs (the forelimbs form wings), and beaked jaws. They have an outer covering of feathers over most of the body and scales on the legs and toes. Fertilisation occurs internally, with the female laying hard-shelled eggs.

Cell membrane - The partially permeable barrier that surrounds a cell.

Classification - The organisation of organisms into groups based on their characteristics and structure. **Classification systems may also reflect evolutionary relationships between organisms.**

Crustacea - A class of arthropods including crabs, lobsters, prawns, shrimps, the water louse and woodlice. They have compound eyes and two pairs of antennae.

Cytoplasm - The jelly-like component of cells that contains sub-cellular structures, dissolved nutrients and salts.



Dichotomous key - A tool consisting of a series of choices (i.e. features) used to identify an unknown organism.

Dicotyledons - Plants that produce seeds that contain two cotyledons (embryonic leaves), resulting in two primary leaves.

DNA - A double-stranded polymer, wound to form a double helix, that carries the genetic code.

DNA base sequence - The sequence of bases in a molecule of DNA which can be used as an accurate method of classification. The more similar the base sequences, the more closely related the organisms.

Enzymes - Biological catalysts that increase the rate of reaction in living organisms.

Excretion - The removal of the waste products of metabolism and substances in excess of requirements from the body.

Ferns - A group of vascular land plants that have neither seeds nor flowers and reproduce via spores from numerous sporangia. They have simple, fleshy underground stems known as rhizomes.

Fish - A class of vertebrates that are poikilothermic. They have a smooth-streamlined shape with fins for movement and are covered in overlapping scales. Fish have gills for breathing and reproduce sexually, with fertilisation normally occurring externally.

Fungus - A biological kingdom consisting of organisms made up of hyphae (long, branching filamentous structures). They reproduce asexually by producing spores.

Growth - An increase in size or dry mass that is permanent. This may be due to an increase in the number or size of cells.

Homoiothermic - Describes an organism that is warm-blooded and whose body temperature is internally regulated.

Insects - A diverse class of arthropods including butterflies, bees, beetles, mosquitoes, houseflies, greenfly and earwigs. They have segmented bodies (consisting of a head, thorax and abdomen), three pairs of jointed legs, one pair of antennae, compound eyes and normally two pairs of wings.

Kingdom - The largest group of organisms identified by biologists. **There are five kingdoms: Animal, Plant, Fungus, Prokaryote and Protocist.**

Mammals - A class of vertebrates that are homoiothermic. They have four limbs and are characterised by the presence of hair or fur, and mammary glands. Mammals produce live young.



Monocotyledons - Plants that produce seeds that contain one cotyledon (embryonic leaf), resulting in one primary leaf.

Movement - A change in position due to the action of an organism or part of an organism.

Myriapods - A class of arthropods consisting of millipedes and centipedes. They have a segmented body, ten or more pairs of jointed legs, one pair of antennae and simple eyes.

Nutrition - The process by which living organisms take in materials necessary for growth, development and energy. Animals require organic compounds, ions and water. Plants require light, carbon dioxide, ions and water.

Plant (kingdom) - A biological kingdom consisting of multicellular organisms that have a cellulose cell wall and can photosynthesise.

Poikilothermic - Describes an organism that is cold-blooded and whose body temperature varies with the temperature of the external environment.

Prokaryote - A biological kingdom consisting of unicellular bacteria which lack a nucleus and membrane-bound organelles.

Protein - A large molecule that is synthesised from amino acids.

Protoctist - A biological kingdom consisting of unicellular eukaryotes.

Reproduction - The processes that make more of the same kind of organism

Reptiles - A class of vertebrates that are poikilothermic. They have four limbs and dry, scaly skin. Reptiles reproduce sexually, with fertilisation occurring internally.

Respiration - Chemical reactions that take place inside cells and release energy from the breakdown of nutrient molecules. This energy is used in metabolism.

Ribosomes - Sub-cellular structures that are the site for protein synthesis.

Sensitivity - The ability to sense and respond to internal and external stimuli in the environment.

Species - A group of similar organisms that can interbreed to produce fertile offspring.

Vertebrates - A group of animals which have a vertebral column (otherwise known as the 'spinal column' or 'spine'). Vertebrates include fish, amphibia, reptiles, birds and mammals.

Virus - A non-living microorganism that consists of genetic material surrounded by a protein coat.

