



Biology LC HL

Definitions



Leaving Certificate Biology Definitions

- Definitions are worth on average about **20% of the total marks available** so they should be **learned precisely**
- They can help you to **answer many other** questions as well.
 - e.g. What is the chemical nature of enzymes? Protein
- A definition may involve **more than one point** of information.
 - In these definitions each point is separated from the next by a solidus (/)
- Sometimes **a particular word is required** – these words are **underlined**
e.g. Relationship between (different) species / in which at least one benefits
- Unacceptable answers are in brackets with **NOT** in front of the answer
- Other things in brackets are either
 - alternative words e.g. **Blastocyst**: fluid filled (or hollow) ball of cells or
 - words to put the answer in context e.g. **Control**: (set up for) comparison

1.1 Scientific Method

Control	<i>(Setup for) comparison</i>
Data	<i>Measurements or observations or information gathered</i>
Experiment	<i>Test of hypothesis</i>
Hypothesis	<i>Educated guess</i>
Law	<i>Theory that has withstood long term testing</i>
Replicate(s)	<i>Repeat(s) / of an experiment</i>
Theory	<i>A supported (tested) / hypothesis</i>

1.2 Nutrition and biomolecules

Saprophytic	<i>Living on / dead organisms (organic matter)</i>
Decomposers	<i>Microorganisms or organisms / that return nutrients to the environment / by decay</i>
Disaccharide	<i>Made up of two sugar units</i>
Fat	<i>Lipid solid at room temperature</i>
Heterotrophic	<i>Obtains food from other organisms or does not make its own food</i>
Lipid	<i>Glycerol + 3 fatty acids</i>
Monosaccharide	<i>Made up of single sugar units</i>
Oil	<i>Lipid liquid at room temperature</i>

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Phospholipid	2 fatty acids and a phosphate attached to glycerol
Polysaccharide	Made up of many / sugar units
Symbiosis	Relationship between (different) <u>species</u> / in which at least one benefits
Trace Element	Small amount needed
Triglyceride	Fat unit or glycerol and three fatty acids

1.3 Ecology

Abiotic (factors)	Non-living (factors)
Adaptations	Features that help an organism to survive in its environment
Adverse external environment	Surroundings that are harmful to an organism
Autotrophic	Make their own food
Biosphere	Parts of earth that support life (NOT global ecosystem)
Biotic Factor	Living (organism's influence on another organism) (NOT examples)
Climatic Factor	Relating to weather
Community	All the organisms living in an area
Competition	Struggle between organisms for resource / in short supply
Conservation	The management of / the environment or of organisms
Contest (competition)	One organism loses (or gets) / all the resource
Data	Measurements or observations or information gathered
Decomposers	Microorganisms or organisms / that return nutrients to the environment / by decay
Ecology	Study of the inter-relationships of plants, animals and their environment
Ecosystem	Organisms [or plants + animals NOT singular] / and their interactions with the environment
Edaphic	To do with soil
Edaphic factor	Soil factor
Eutrophication	Excess plant growth caused by excess nutrients
Fauna	Animals (NOT examples)
Flora	Plants (NOT examples)
Food Chain	One species at each trophic level
Food Web	Interconnected food chains or more than one species at each trophic level
Germination	Growth of seed or embryo
Habitat	Place where a species (or an organism) / lives [NOT plants or animals by themselves]
Heterotrophic	Obtains food from other organisms or does not make its own food

Heterotrophic	Obtains food from other organisms or does not make its own food
Key	A guide to / identification
Mutualism	Close relationship between two <u>species</u> where <u>both</u> benefit
Niche	Role of organism / in an ecosystem
Nitrification	Ammonia to nitrites (or to nitrates) or nitrites to nitrates
Nitrogen fixation	Atmospheric N₂ / converted to compound
Nutrient recycling	Returning elements to the environment so they can be reused
Omnivore	Eats plants and animals
Parasitic	Living in or on another <u>species</u> / <u>causing harm</u>
Percentage cover	Percentage of quadrat covered by a species
Percentage frequency	Percentage of quadrats in which a species is present
Pollution	Any harmful addition / to the environment
Population	All the members of a <u>species</u> living in an area
Predation	Killing (or catching) / and eating / another <u>animal</u>
Predator	Animal that kills / and eats / other animals
Prey	Animal that is killed / and eaten
Producer	Organism that makes its own food (from inorganic materials)
Pyramid of Numbers	Diagram that shows numbers of organisms at each trophic level
Qualitative (Survey)	<u>Types</u> (or <u>Species</u>) of organisms present
Quantitative	<u>Numbers</u> of individuals (of a species) present
Saprophytic	Living on / dead organisms (organic matter)
Scramble Competition	Each organism gets / some of resource
Symbiosis	Relationship between (different) <u>species</u> / in which at least one benefits
Trophic level	Feeding level or energy level or position in food chain

2.1 Cells Structure and Function

Cancer	Group of disorders / in which body loses control of normal regulation / of mitosis
Cell continuity	All cells are derived by the division of other cells
Cytoplasm	All of the cell except nucleus, / cell wall / and large vacuole
Cytosol	Cytoplasm / minus organelles (or structures or particles) or liquid part / of cytoplasm
Diffusion	Movement of molecules / from area of high concentration / to area of low concentration (NOT examples)
Eukaryotic	Have nuclear membrane or membrane bound cell organelles
Meiosis	Division of a cell to give to give four non-identical cell with half the number of chromosomes as the parent cell

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Metabolism	<i>All the chemical reactions / in a living cell or body</i>
Mitosis	<i>Division of a cell to give two identical cells with the same number of chromosomes</i>
Organ	<i>Group of tissues carrying out a common function</i>
Organ system	<i>Group of organs carrying out a common function</i>
Osmosis	<i>Movement of water / from an area of high water concentration (hypotonic solution) to an area of low water concentration (hypertonic solution) / across a selectively permeable membrane</i>
Passive Transport	<i>Movement across a semi-permeable membrane / no (added) energy required</i>
Prokaryotic	<i>Have NO nuclear membrane or membrane bound cell organelles</i>
Selective Permeability	<i>Allowing some substances / to pass through</i>
Tissue	<i>Group of similar cells with common function</i>
Tissue Culture	<i>Cells (NOT tissue) / grown on or in a medium / outside organism</i>
Turgor	<i>Pressure against the cell wall caused by the cell membrane pushing against the cell wall due to it being full of water</i>

2.2 Enzymes

Active site	<i>Place where substrate fits onto enzyme</i>
Bioreactor	<i>Vessel in which cells or their products produce useful substances</i>
Denatured (Enzyme)	<i>Loss of / enzyme function or activity</i>
Enzyme	<i>Protein / biological / catalyst</i>
Immobilised	<i>Trapped in a calcium alginate gel</i>
Optimum	<i>Temperature or pH at which the enzyme works <u>best</u></i>
Protease Enzyme	<i>Breaks down or acts on / protein</i>
Specificity	<i>(Enzyme) acts on only / a particular (specific OK here) substrate</i>
Substrate	<i>Substance the enzyme acts on</i>

2.3 Photosynthesis

Photosynthesis	<i>Conversion of light energy into chemical energy using CO₂, H₂O and chlorophyll</i>
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2.4 Respiration

Aerobic	<i>(Respiration that) requires / oxygen</i>
Anabolic reactions	<i>Reactions synthesising more complex substances</i>
Anaerobic	<i>(respiration that) does <u>not</u> require / oxygen</i>
Catabolic	<i>Breaking down complex molecules into simpler molecules</i>
Fermentation	<i>Anaerobic / respiration or respiration / that produces alcohol or lactic acid</i>

Metabolism	<i>All the chemical reactions / in a living cell or body</i>
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2.5 DNA and Protein Synthesis

Anti-codon	<i>Group of three bases on tRNA</i>
Codon	<i>Group of three bases <u>on mRNA</u></i>
DNA Replication	<i>Making a copy / of DNA</i>
Gene	<i>Unit of inheritance or length of DNA that code for a protein</i>
Gene expression	<i>When a gene is switched on and produces its characteristic or protein</i>
Genetic Engineering	<i>Manipulation or alteration / of genes or of genotypes</i>
Genetic Screening	<i>Testing (people) for the presence or absence / of a specific gene</i>
Heredity	<i>Passing of genetically controlled characteristics from parents to offspring</i>
mRNA	<i>Messenger RNA carries information from gene to ribosome</i>
Protease	<i>An enzyme that digests proteins</i>
Transcription	<i>Making of mRNA / using the DNA template</i>
Translation	<i>Making a protein using mRNA code</i>
Triplet	<i>Group of three bases on DNA which code for an amino acid</i>
tRNA	<i>Transfer RNA brings specific amino acids to the ribosomes</i>

2.6 Genetics Inheritance and Crosses

Alleles	<i>Different forms / of a gene</i>
Artificially Fertilised Cell	<i>Diploid nucleus / into ovum without nucleus</i>
Diploid	<i>A nucleus having two sets / of chromosomes (NOT having pairs)</i>
Dominant	<i>An allele / that masks its (recessive) partner or that is always expressed if present</i>
Dominant	
Evolution	<i>Inheritable change in a population (or species) / in response to a change in the environment / by natural selection / over time</i>
Fertilisation	<i>Fusion of male and female gametes to form a diploid zygote</i>
Gamete	<i>Haploid male or female sex cell</i>
Gene	<i>Unit of inheritance or length of DNA that code for a protein</i>
Genotype	<i>Genetic make-up</i>
Haploid	<i>A nucleus / having one set of chromosomes</i>
Heterozygous	<i>Alleles / different</i>
Homologous chromosomes	<i>Chromosomes which are the same size and shape containing the same genes</i>
Homologous structures	<i>Same basic structure modified for different functions</i>

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Homozygous	Identical / alleles [accept identical genes]
Incomplete dominance	Phenotype of heterozygous individual is intermediate between the two characteristics
Independent Assortment (Law of)	Either member of a pair of alleles / can combine with / either member of another pair of alleles / in gamete formation
Junk DNA	Non-coding DNA
Linkage	Genes / on the same chromosome
Locus	Point on a chromosome where a gene is found
Mutation	Change in / genetic makeup or in DNA
Phenotype	Physical appearance or expression of genotype or result of genotype + environment
Recessive	Allele / whose expression is masked by / dominant allele
Segregation (Law of)	Only one member / of a pair of alleles / enters a gamete
Sex Linkage	Gene located on a sex (or X or Y) chromosome
Species	Interbreeding results in / fertile offspring
Variation	Difference between / members of species or population

3.1 Microbiology

Anaerobic (Respiration)	(respiration that) does <u>not</u> require / oxygen
Antibiotic	Substance produced by micro-organisms (or bacteria or fungi) / that kills micro-organisms (or bacteria or fungi)
Antibiotic resistance	Not killed by antibiotics
Asepsis	Prevention of contamination
Batch process	Reactants added, allowed to react, products removed, bioreactor cleaned, start again
Bioreactor	Vessel / in which products are made / by cells (or organisms)
Chemosynthetic (Bacteria)	Make food or obtain energy / using chemical reactions
Continuous process	Reactants added to bioreactor over a period of time and products removed over a period of time
Cytoplasm	All of the cell except nucleus, / cell wall / and large vacuole
Cytosol	Cytoplasm / minus organelles (or structures or particles) or liquid part / of cytoplasm
Eukaryotic	Possesses / nucleus or membrane-bound organelles
Expression	The activation of the inserted gene or the production of product
Fermentation	Anaerobic / respiration or respiration / that produces alcohol or lactic acid
Hypha	A filament (single strand of fungus)
Immobilisation	Attached to an inert substance or fixed to each other or trapped
Introduction of base	(the order of bases in) the host DNA is now different

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<i>sequence changes</i>	
<i>In-vitro Fertilisation</i>	<i>Sperm and egg fuse / outside the body</i>
<i>Isolation</i>	<i>Removal of a gene or piece of DNA or plasmid</i>
<i>Ligation</i>	<i>Joining of DNA (or plasmid or gene)</i>
<i>Mutualistic</i>	<i>Close association between two species where both benefit e.g. bacteria in large intestine get food and shelter and give vitamins B and K</i>
<i>Mycelium</i>	<i>A mass of / hyphae</i>
<i>Nutrient Agar Plates</i>	<i>Jelly / <u>with additives</u> (food) to provide a medium for growth</i>
<i>Nutrient Medium</i>	<i>Material [or described] / supplying food or material / allowing growth</i>
<i>Optimum pH</i>	<i>pH at which enzyme works best</i>
<i>Parasitic</i>	<i>Living in or on another species / <u>causing harm</u></i>
<i>Pathogenic</i>	<i>Disease-causing</i>
<i>Photosynthetic (Bacteria)</i>	<i>Using light / to make food or obtain energy</i>
<i>Prokaryotic</i>	<i>Have NO nuclear membrane or membrane bound cell organelles</i>
<i>Restriction (or cutting)</i>	<i>Cutting the DNA or plasmid (NOT gene) with a restriction <u>enzyme</u></i>
<i>Saprophytic</i>	<i>Living on / dead organisms (organic matter)</i>
<i>Sterile</i>	<i>No unwanted micro-organisms present</i>
<i>Symbiotic Bacteria</i>	<i>Bacteria that live <u>in or on</u> another organism / involving benefit</i>
<i>Transformation</i>	<i>Uptake of DNA (or plasmid or gene)</i>

3.2 Flowering Plant Structure and Function

<i>Autotrophic</i>	<i>Make their own food</i>
<i>Adhesion</i>	<i>Force of attraction between water molecules and xylem walls</i>
<i>Cohesion</i>	<i>Force of attraction between water molecules</i>
<i>Dicot(yledon)</i>	<i>Two / embryonic leaves or two / seed leaves</i>
<i>Meristem</i>	<i>Area of rapid cell division</i>
<i>Monocot(yledon)</i>	<i>Having one seed leaf</i>
<i>Stain</i>	<i>Sunstance that makes cell structures easier to see e.g. iodine for plants and methylene blue for animal cells</i>

3.3 Flowering Plant Reproduction

<i>Adaptations</i>	<i>Features that help an organism to survive in its environment</i>
<i>Bulb</i>	<i>Leaf (or bud) storage / and perennating organ</i>
<i>Carpel</i>	<i>Female part of the flower that consists of stigma, style and ovary</i>
<i>Cross pollination</i>	<i>Pollen from one plant goes to another</i>

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Dicot(yledon)	Two / embryonic leaves or two / seed leaves
Dormancy	Period of reduced / metabolism or period of no growth. (Not rest)
Double fertilisation	In plants one male gamete fuses with the egg cell to form a diploid zygote; the other fuses with the polar nuclei to form the triploid endosperm
Fertilisation	Fusion of / gametes / to form zygote
Germination	Growth of seed or embryo
Monocot(yledon)	Having one seed leaf
Pollination	Transfer of pollen / from anther to stigma
Self pollination	Pollen from on plant is transferred to a stigma on the same plant
Stamen	Male part of the flower consists of filament and anther
Tuber	Stem storage / and perennating organ
Vegetative Propagation	Production of new plant / from root (or stem or leaf) or plant asexual reproduction

3.3 Flowering Plant Responses

Protoplasm	All of cell including membrane / except large vacuole in plants
Thigmotropism	A growth response / to touch
Tropism	<u>Growth</u> of a plant / in response to a <u>stimulus</u>
Plant Growth Regulator	Substance that controls the growth of a plant [promotes, inhibits, stimulates OK but NOT regulates]
Auxin	A growth regulator / in plants
Chemotropism	A growth response / to a chemical (or substances)
Hormone	Chemical messenger produced by an endocrine gland
Negatively (geotropic)	Grows away from (gravity)
Hydrotropism	Plant growth response to water
Geotropism	Plant growth response to gravity
Phototropism	Plant growth response to light
Positively (phototropic)	Grows towards (light)

4.1 Blood Lymphatic and Immune Systems

Active (Induced) Immunity	Protection gained by the detection of antigens and the production of specific antibodies that neutralise the antibody
Active Immunity	Body produces / antibodies

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Antibiotic	<i>Substance produced by micro-organisms (or bacteria or fungi) / that kills micro-organisms (or bacteria or fungi)</i>
Antibiotic	<i>Substance produced by micro-organisms (or bacteria or fungi) / that kills micro-organisms (or bacteria or fungi)</i>
Antibody	<i>Produced in response to antigen or destroys antigen or defence protein or produced by lymphocytes</i>
Antigen	<i>Substance on cell membrane / that causes antibody production</i>
Blood pressure	<i>Force exerted by blood (or by heart) [accept relevant medical reference]</i>
Diastole	<i>Period of relaxation when heart fills</i>
Immunisation	<i>Protecting a population (patient) against a specific pathogen by vaccination or injection of a particular antibody</i>
Immunity	<i>Resistance to / infection or antigens [allow disease]</i>
Passive Immunity	<i>Antibodies / introduced to body</i>
Pathogenic	<i>Disease-causing</i>
Plasma	<i>Liquid part of blood</i>
Pulse	<i>Expansion of artery or due to pumping of heart or rate at which heart beats</i>
Systole	<i>Period of contraction when heart empties</i>
Vaccination	<i>The act of administering a substance that produces (artificial) immunity</i>

4.2 Breathing System

No definitions for this section

4.3 Digestive System

Autotrophic	<i>Make their own food</i>
Balanced diet	<i>Contains all the nutrient types in the correct proportions</i>
Carnivore	<i>Eats animals</i>
Deficiency disease	<i>Disease associated with the lack of a particular vitamin</i>
Digestion	<i>The breakdown of food / into smaller particles / that can be absorbed</i>
Enzyme	<i>Protein, biological catalyst</i>
Herbivore	<i>Eats plants</i>
Heterotrophic	<i>Gets food from other organisms</i>
Lipase	<i>An enzyme that digests fats</i>
Omnivore	<i>Eats plants and animals</i>
Peristalsis	<i>Muscular activity or description e.g. contractions to move food</i>
Protease	<i>An enzyme that digests proteins</i>

4.4 Excretory System and Homeostasis

Active Transport	<i>Movement across a semi-permeable membrane / against the concentration gradient / requires energy</i>
Ectotherm	<i>Body temperature varies / with environmental temperature</i>
Endotherm	<i>Animal that produces its own heat and maintains a steady body temperature</i>
Excretion	<i>Removal of metabolic waste from the body</i>
Glomerular Filtrate	<i>Plasma that has entered Bowman's capsule or has left the glomerulus or plasma less proteins</i>
Homeostasis	<i>Maintenance of / a constant internal environment</i>
Poikilothermic	<i>Animal whose body temperature varies / with that of the environment</i>
Ureter	<i>Tube from kidney / to bladder</i>
Urethra	<i>Tube from bladder / to outside</i>

4.5 Nervous and Endocrine Systems

Central Nervous System	<i>CNS: consists of brain and spinal cord</i>
Endocrine gland	<i>Ductless or hormone producing</i>
Exocrine Gland	<i>Has a duct</i>
Feedback(Negative)	<i>When the level of one hormone inhibits the production of another (or itself)</i>
Feedback(Positive)	<i>When the level of one hormone increases the production of another</i>
Grey Matter	<i>Consists mostly of cell bodies and dendrites</i>
Hormone	<i>Chemical messenger produced by an endocrine gland</i>
Interneuron	<i>Connects sensory / and motor neuron</i>
Motor Neuron	<i>Carries impulse / from CNS to effector</i>
Neuron	<i>Nerve cell</i>
Neurotransmitter	<i>Carries impulse / across synaptic cleft / triggers impulse in next neuron</i>
Peripheral Nervous System	<i>PNS: consists of sensory receptors, sensory and motor neurons and end-plates</i>
Reflex Action	<i>Automatic / response to a stimulus / not controlled by brain</i>
Sensory Neuron	<i>Carries impulse / to CNS</i>
White Matter	<i>Much myelin or few cell bodies</i>

4.6 Musculo-skeletal System

Contractile	<i>It can shorten (or contract)</i>
Axial Skeleton	<i>Consists of skull, vertebrae, ribs and sternum</i>
Appendicular Skeleton	<i>Consists of pelvic and pectoral girdles and limbs</i>

Antagonistic pair	Two muscles that work against each other e.g. biceps and triceps
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4.7 Human Reproduction

Afterbirth	The passing of the placenta after the baby
Amnion	A membrane (or sac) that surrounds the embryo
Blastocyst	Fluid-filled (or hollow) / ball of cells
Contraception	Prevention of / fertilisation or conception or implantation or pregnancy
Copulation	The depositing of sperm in the vagina using the penis
Feedback(Negative)	When the level of one hormone (inhibits the production of another)
Feedback(Positive)	When the level of one hormone (increases the production of another)
Fertilisation	Fusion of / gametes / to form zygote
Germ Layer	Layer of cells / in the blastula / with potential to give rise to specific tissues or organs
Hormone	Chemical messenger produced by an endocrine gland
Implanted	Attached to or embedded in / the endometrium
Infertility	Inability to conceive
In-vitro Fertilisation	Fusion of gametes outside the body
Morula	Solid / ball of cells
Ovulation	The release of the egg from the ovary
Placenta	Tissue formed from the mother's and embryo's tissue
Secondary Sexual Characteristics	Anatomical features that develop at puberty under the influence of sex hormones
Semen	Sperm cells /plus seminal fluid
Urethra	Tube from bladder / to outside / carries urine and sperm