**A2 Biology Unit 4 Key Terms and Definitions**

**Make sure you use these terms when answering exam questions!**

Chapter 1 – Populations

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| **Book Ref** | **Key Term** | **Definition** |
| 1.1 | Ecosystem | Self-contained unit made up of the biotic and abiotic factors in an area |
| 1.1 | Population | A group of individuals of the same species in a habitat |
| 1.1 | Community | The organisms of all species that live in the same area |
| 1.1 | Habitat | The place where an organism normally lives |
| 1.1 | Niche | All the conditions and resources required for an organism to survive and reproduce (its ‘role’) |
| 1.2 | Random Sampling | Sampling a population to eliminate bias e.g. grid square and co-ordinates |
| 1.2 | Systematic Sampling | Regular sampling across an area e.g. along a straight line transect |
| 1.2 | Mark-Release-Recapture | Method of estimating population size of animals (number in first sample x number in second sample) / marked animals in second sample |
| 1.3 | Abiotic Factors | Concerned with the non-living part of the environment |
| 1.3 | Biotic Factors | Concerned with the living organisms in the environment |
| 1.4 | Interspecific Competition | Competition between organisms of different species |
| 1.4 | Intraspecific Competition | Competition between organisms of the same species |

Chapter 2 – ATP

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| **Book Ref** | **Key Term** | **Definition** |
| 2.1 | Energy | The ability to do work |
| 2.1 | Phosphorylation | The process of adding a phosphate group (e.g. ADP 🡪 ATP) |

Chapter 3 – Photosynthesis

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| **Book Ref** | **Key Term** | **Definition** |
| 3.1 | Light Dependent Reaction | Stage of photosynthesis in which light energy is required to produce ATP and reduced NADP |
| 3.1 | Light Independent Reaction | Stage of photosynthesis which does not require light energy directly, but does need the products of the light dependent reaction to reduce CO2 and form carbohydrate |
| 3.2 | Oxidation | Loss of electrons, combining oxygen with a substance |
| 3.2 | Reduction | Gain of electrons, loss of oxygen from a substance |
| 3.2 | Electron Carrier Molecules | A chain of carrier molecules along which electrons pass, releasing energy in the form of ATP as they do so |
| 3.2 | Photolysis of Water | Light energy splits water molecules, yielding electrons, hydrogen ions and oxygen (light-dependent reaction) |
| 3.3 | Calvin Cycle | A biochemical pathway (part of the light-independent reaction) where CO2 is reduced to form carbohydrate  CO2 + RuBP 🡪 GP 🡪 TP 🡪 Glucose or RuBP |
| 3.4 | Limiting Factor | A variable that limits the rate of a chemical reaction |

Chapter 4 – Respiration

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| **Book Ref** | **Key Term** | **Definition** |
| 4.1 | Glycolysis | First part of cellular respiration in which glucose is broken down (in the cytoplasm) to 2 molecules of pyruvate |
| 4.2 | Link Reaction | Process linking Glycolysis to the Krebs Cycle (in the matrix of the mitochondria), where the 2 molecules of pyruvate are converted to CO2 and acetylcoenzyme A |
| 4.2 | Krebs Cycle | Introducing acetylcoenzyme A into a cycle of oxidation-reduction reactions (in the matrix of the mitochondria) that yield some ATP and a large number of electrons |
| 4.3 | Electron Transport Chain | Use of electrons from the Krebs Cycle to synthesise ATP via a series of oxidation-reduction reactions |
| 4.4 | Anaerobic Respiration | Releasing energy from glucose without oxygen (produces lactate in animals and ethanol in plants and some micro-organisms) |

Chapter 5 – Energy and Ecosystems

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| **Book Ref** | **Key Term** | **Definition** |
| 5.1 | Trophic Level | Each stage in a food chain |
| 5.1 | Consumers | An organism that obtains its energy by feeding on other organisms |
| 5.2 | Gross Production | Total quantity of energy that the plants in a community convert to organic matter |
| 5.2 | Net Production | Gross production – respiratory losses |
| 5.2 | Energy Transfer | (Energy available after the transfer / energy available before the transfer) x 100 |
| 5.3 | Pyramid of Number | A pyramid drawn with bar lengths proportional to the numbers of organisms present |
| 5.3 | Pyramid of Biomass | A pyramid drawn with bar lengths proportional to the mass of plants/animals |
| 5.3 | Pyramid of Energy | A pyramid drawn with bar lengths proportional to the energy stored in organisms |
| 5.5 | Biological Control | Controlling pests by introducing predators |
| 5.6 | Selective Breeding | Breeding of organisms by human selection of parents for certain characteristics |

Chapter 6 – Nutrient Cycles

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| **Book Ref** | **Key Term** | **Definition** |
| 6.1 | Saprobiotic Micro-organism | (Saprophyte) An organisms that gets it food from the dead or decaying remains of other organisms |
| 6.2 | Greenhouse Gases | Gases such as methane and CO2 which trap more heat energy, raising the Earth |
| 6.3 | Ammonification | Production of ammonia from e.g. urea and proteins |
| 6.3 | Nitrification | Converting ammonia into nitrites and then nitrates |
| 6.3 | Nitrogen Fixation | Conversion of nitrogen gas into nitrogen-containing compounds |
| 6.3 | Denitrification | Conversion of soil nitrates into mitrogen gas |
| 6.5 | Leaching | Process by which nutrients are washed from the soil into watercourses |
| 6.5 | Eutrophication | Consequence of an increase in nutrients in watercourses that leads to a decrease in biodiversity |

Chapter 7 – Ecological Succession

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| **Book Ref** | **Key Term** | **Definition** |
| 7.1 | Succession | The changes in an ecosystem, over time, of the species that occupy it |
| 7.1 | Pioneer Species | A species that can colonise bare rock or ground |
| 7.1 | Climax Community | The stable, final, community that exists in a balanced equilibrium |
| 7.2 | Conservation | Management of the Earth’s natural resources in such a way that maximum use can be made of them in the future |

Chapter 8 – Inheritance and Selection

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| **Book Ref** | **Key Term** | **Definition** |
| 8.1 | Genotype | The genetic composition of an organism |
| 8.1 | Phenotype | The characteristics of an organism (often visible), resulting from its genotype and the environment |
| 8.1 | Gene | A length of DNA that codes for a polypeptide |
| 8.1 | Allele | One form of a gene |
| 8.1 | Homologous Chromosomes | A pair of chromosomes that have the same gene loci and determine the same features |
| 8.1 | Dominant | An allele that is always expressed in the phenotype |
| 8.1 | Recessive | An allele that is only expressed in the phenotype when there is another identical allele |
| 8.1 | Heterozygous | When the alleles are different for a particular gene |
| 8.1 | Homozygous | When the alleles are the same for a particular gene |
| 8.3 | Sex Linkage | Any gene that is carried on the X or Y chromosome |
| 8.4 | Co-dominance | Both alleles are equally dominant and are both expressed in a phenotype |
| 8.4 | Multiple Alleles | More than 2 possible alleles for a particular gene |
| 8.5 | Gene Pool | All the alleles of all the genes of all the individuals in a population at any one time |
| 8.5 | Allelic Frequency | The number of times the allele occurs within a gene pool |
| 8.6 | Stabilising Selection | Selection that favours average individuals |
| 8.6 | Directional Selection | Selection that favours individuals at one extreme |
| 8.7 | Speciation | The evolution of new species from existing species |
| 8.7 | Geographical Isolation | When a physical barrier prevents two populations from breeding with one another |