

# WJEC (Eduqas) Biology A-level

## Core Concept 4 - Enzymes

### Definitions and Concepts

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**Activation energy** - The minimum amount of energy needed for a reaction to happen.

**Active site** - A specific region on an enzyme where the substrate binds and the reaction takes place.

**Buffer** - A molecule that maintains a constant pH in a solution by neutralising small volumes of added acid or base.

**Catalysis** - Increasing the rate of a chemical reaction via the reduction in activation energy.

**Competitive inhibitors** - A molecule which binds to the active site of an enzyme and prevents the substrate from binding.

**Denaturation** - Upon exposure to high temperatures or extremes of pH, the permanent change in the tertiary structure of an enzyme and the shape of its active site, preventing it from carrying out its function.

**Enzyme** - A biological catalyst used to speed up the rate of biochemical reactions without being used up or permanently altered.

**Enzyme-product complex** - The temporary complex formed after the enzyme has catalysed the reaction but before the products have left the active site of the enzyme.

**Enzyme-substrate complex** - The temporary complex formed when the substrate binds to the active site of the enzyme.

**Extracellular reaction** - A reaction that occurs outside of cells.

**Immobilised enzymes** - Enzymes which are attached to an inert, insoluble material over which the substrate passes and the reaction takes place.

**Induced-fit hypothesis** - A model of enzyme action that describes how once a specific substrate binds to the active site, the enzyme undergoes subtle conformational changes to fit the substrate better.

**Intracellular reaction** - A reaction that occurs within cells.

**Lock and key hypothesis** - A model of enzyme action that describes how the enzyme will only fit a substrate that has the correct complementary shape to the active site.

**Lysozyme** - An enzyme found in tears and saliva that damages the cell walls of bacteria.

**Metabolism** - The sum of all the enzyme controlled chemical reactions taking place in a cell.

**Non-competitive inhibitors** - An inhibitor which binds to a different part of an enzyme known as the allosteric site and prevents the enzyme from functioning.

**Substrate specificity** - The ability of an enzyme to catalyse only a specific reaction or set of reactions which have substrates complementary to the active site of the enzyme.

