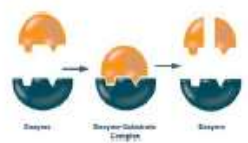


Enzymes catalyse (increase the rate of) specific reactions in living organisms

The 'lock and key theory' is a simplified model to explain enzyme action

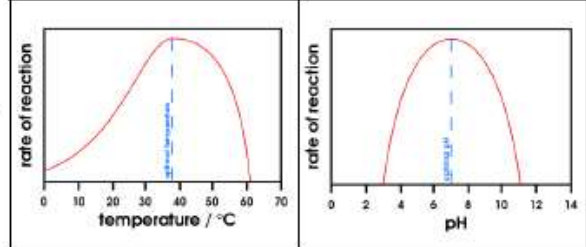


Enzymes catalyse specific reactions in living organisms due to the shape of their active site

Digestive enzymes speed up the conversion of large insoluble molecules (food) into small soluble molecules that can be absorbed into the bloodstream

The activity of enzymes is affected by changes in temperature and pH

Enzymes activity has an optimum temperature Enzyme activity has an optimum pH



Large changes in temperature or pH can stop the enzyme from working (denature)

Temperature too high pH too high or too low

Enzyme changes shape (denatures) the substrate no longer fits the active site.

Enzymes in digestion

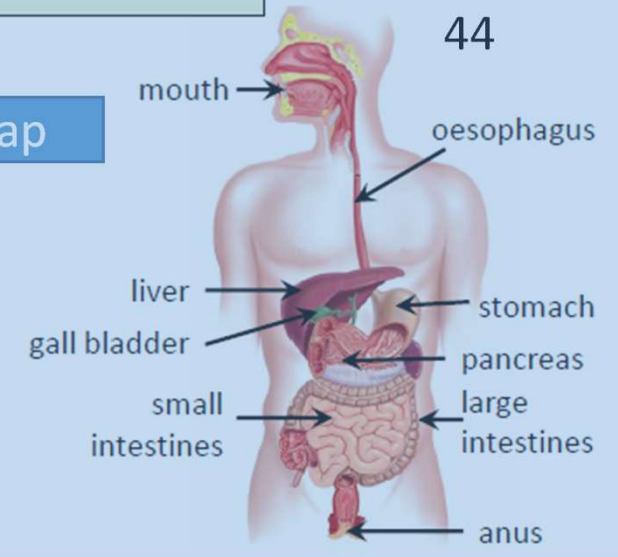
The human digestive system

AQA GCSE ORGANISATION Part 1

Principles of organisation

An organ system in which organs work together to digest and absorb food.

Blue = Recap



Food tests

Sugars (glucose)	<i>Benedicts' test</i>	Orange to brick red precipitate.
Starch	<i>Iodine test</i>	Turns black.
Biuret	<i>Biuret reagent</i>	Mauve or purple solution.

Carbohydrases (e.g. amylase)		<i>Made in salivary glands, pancreas, small intestine</i>	Break down carbohydrates to simple sugar (e.g. amylase breaks down starch to glucose).
Proteases		<i>Made in stomach, pancreas</i>	Break down protein to amino acids.
Lipases		<i>Made in pancreas (works in small intestine)</i>	Break down lipids (fats) to glycerol and fatty acids.
Bile (not an enzyme)		<i>Made in liver, stored in gall bladder.</i>	Emulsifies lipids to increase surface area to increase the rate of lipid break down by lipase. Changes pH to neutral for lipase to work

The products of digestion are used to build new carbohydrates, lipids and proteins. Some glucose is used for respiration.

Cells, tissues, organs and systems

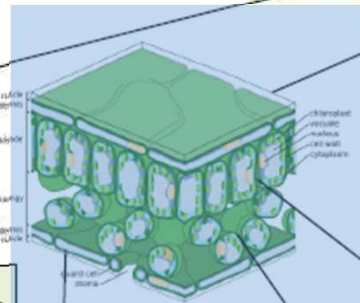
Cells		<i>e.g. muscle cells</i>	The basic building blocks of all living organisms.
Tissues		<i>e.g. muscle tissue</i>	A group of cells with a similar structure and function.
Organs		<i>e.g. the heart</i>	Aggregations (working together) of tissues performing a specific function.
Organ systems		<i>e.g. the circulatory system</i>	Organs working together to form organ systems, which work together to form an organism.

Heart failure can be treated with a transplant or artificial heart

AQA GCSE ORGANISATION part 3

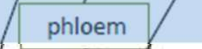
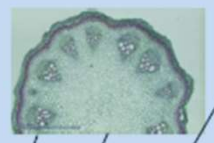
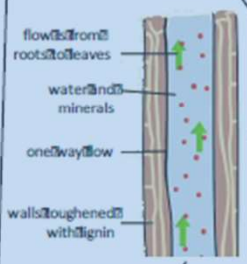
Plant tissues

Plant organ systems



Epidermal tissues	<i>Waxy cuticle (top layer of the leaf)</i>	Reduces water loss from the leaf
	<i>Guard cells and stomata</i>	Guard cells open and close the stomata to control water loss and allow for gas exchange (oxygen and carbon dioxide).
Palisade mesophyll	<i>Palisade cells</i>	Cells near the top surface of the leaf that are packed with chloroplasts that contain chlorophyll. Both adaptations maximize photosynthesis.
Spongy mesophyll	<i>Air spaces in the leaf between cells</i>	Increased surface area for gas exchange so that carbon dioxide can diffuse into photosynthesising cells.
xylem	<i>Hollow tubes strengthened by lignin adapted for the transportation of water in the transpiration stream</i>	Allows transport of water and mineral ions from the roots to the stem and the leaves.
phloem	<i>Cell sap moves from one phloem cell to the next through pores in the end walls</i>	Transports dissolved sugars from the leaves to the rest of the plant for immediate use or storage (translocation).
Meristem tissue	<i>New cells (roots and shoot tips) are made here including root hair cells</i>	Root hair cells have an increased surface area for the uptake of water by osmosis, and mineral ions by active transport.

The roots, stem and leaves form a plant organ system for transport of substances around the plant



Effect of Humidity on Plant Transpiration

Faulty heart valves	Coronary heart disease (CHD)	Disease
<i>Valves don't open or close properly</i>	<i>A build up for fatty substances in the coronary arteries (atherosclerosis)</i>	Cause
Blood can leak or flow in the wrong direction	Oxygen-ated blood cannot get to the cardiac muscle.	Effect
Biological valve transplant or a mechanical valve can be inserted	Stents: inserted into the blocked artery to open it up. Statins: lower harmful cholesterol.	Treatment

