

1 – Cell Organisation			
Cells	Building blocks of life.		
Tissue	Group of <b>similar cells</b> that work together.		
Organ	Group of <b>different tissues</b> that work together.		
Organ System	Group of <b>organs</b> that work together.		
Organism	Group of <b>organ systems</b> that work together.		
2 - Enzymes			
Enzymes	Biological catalysts -> increase the <b>speed</b> of a reaction without being <b>changed</b> or <b>used up</b> . They are <b>proteins</b> .		
Substrate	Molecule that <b>binds</b> to the <b>active site</b> of an <b>enzyme</b> . Forms an <b>enzyme-substrate complex</b> .		
Lock and Key Model	Only <b>one type</b> of <b>substrate</b> can fit in the <b>active site</b> of an enzyme.		
Denaturing	<b>Active site</b> changes <b>shape</b> -> due to <b>high temperatures</b> or <b>extreme pH</b> -> <b>substrate</b> can no longer bind.		
3 - Digestive Enzymes			
Enzyme	Function	Site of production	Site of action
Carbohydrase e.g. amylase	Carbohydrates -> simple sugars e.g. starch -> maltose	Salivary glands Pancreas Small intestine	Mouth Small intestine
Protease e.g. pepsin	Proteins -> amino acids	Stomach Pancreas Small intestine	Stomach Small intestine
Lipase	Lipids -> fatty acids and glycerol	Pancreas Small intestine	Small intestine
4 - Other Digestive Chemicals			
Bile	Made in <b>liver</b> -> stored in <b>gall bladder</b> -> released into <b>small intestine</b> . Two functions: 1. <b>Alkaline</b> so <b>neutralises acidic food</b> from stomach. 2. <b>Emulsifies lipids</b> (breaks into <b>smaller droplets</b> ) -> <b>larger S.A.</b> .		
Hydrochloric acid	Found in <b>stomach</b> . Two functions: 1. <b>Kills pathogens</b> . 2. Provides <b>optimum pH</b> for <b>pepsin</b> enzyme.		

5 – Food Tests	
Prepare sample	Crush food -> add <b>water</b> -> <b>mix</b> -> <b>filter</b> out solid bits.
Test for sugars	<b>Benedict's solution</b> -> put in <b>water bath</b> at <b>75 °C</b> -> turns from <b>blue</b> to <b>green, yellow</b> or <b>brick-red</b> .
Test for starch	<b>Iodine solution</b> -> turns from <b>brownish-orange</b> to <b>blue-black</b> .
Test for proteins	<b>Biuret solution</b> -> turns from <b>blue</b> to <b>pink</b> or <b>purple</b> .
Test for lipids	<b>Sudan III solution</b> -> forms a <b>bright red top layer</b> . Or shake with <b>ethanol</b> -> forms a <b>cloudy emulsion</b> .
6 - Lungs	
Structure	Trachea (windpipe) -> <b>bronchi</b> -> <b>bronchioles</b> -> <b>alveoli</b>
Oxygen	<b>Diffuses</b> from <b>alveoli</b> into <b>red blood cells</b> in <b>capillaries</b> .
Carbon dioxide	<b>Diffuses</b> from <b>blood plasma</b> in <b>capillaries</b> into <b>alveoli</b> .
Adaptations of alveoli for gas exchange	1. <b>Many small alveoli</b> -> <b>large surface area</b> . 2. <b>Thin walls</b> -> <b>short diffusion pathway</b> . 3. <b>Good ventilation</b> and <b>capillary network</b> -> <b>steep concentration gradient</b> maintained.
7 - Heart	
Double Pump	<b>Right side</b> pumps <b>blood</b> to <b>lungs</b> . <b>Left side</b> pumps <b>blood</b> to <b>body cells</b> .
Vena cava	Carries <b>deoxygenated</b> blood from <b>body cells</b> into <b>right atrium</b> .
Pulmonary artery	Carries <b>deoxygenated blood</b> from <b>right ventricle</b> to <b>lungs</b> .
Pulmonary vein	Carries <b>oxygenated</b> blood from <b>lungs</b> to <b>left atrium</b> .
Aorta	Carries <b>oxygenated</b> blood from <b>left ventricle</b> to <b>body cells</b> .
Pacemaker	Cells in <b>right atrium wall</b> that control <b>resting heart rate</b> . Produce a small <b>electrical impulse</b> -> makes <b>muscle cells contract</b> .

## GCSE Science

### Biology B2 – Cell Organisation Part 1