KS4 Biology 2 - Organisation **Organisation Of Cells** 1 Cells the basic building blocks of all living organisms Tissue 2 group of cells with similar structure and function 3 group of tissues working together in a specific role Organs Organ Systems 4 groups of organs working together e.g. digestive system Digestive System 5 Enzyme a biological catalyst – it speeds up reactions in living organisms the area of the enzyme shaped to fit a specific substrate Active Site 6 7 Substrate the substance the enzyme works on Lock And Key 8 a simplified model to explain enzyme action Theory Digestive help to break down food into small soluble molecules that can be 9 Enzymes absorbed into the bloodstream made in the salivary glands and pancreas. breaks down starch. 10 Amylase made in the stomach, pancreas and small intestines 11 Proteases breaks down proteins into amino acids made in the pancreas and stomach. 12 Lipases breaks down lipids (fats) to glycerol and fatty acids 13 Bile made in the liver and stored in the gall bladder - alkaline to **neutralise** hydrochloric acid from the stomach 14 Uses Of Bile emulsifies fat into small droplets (increases the surface area) - increases the rate of fat breakdown by lipase 15 **Required Practical**: Use Qualitative Reagents To Test The Nutrient Content Of Foods i) use a small sample of crushed food mixed in water A Method: ii) test with each reagent to identify the nutrients present changes colour from blue to orange/red if sugars are present B Benedict's Solution C lodine changes colour from brown to black if starch is present D Biuret Reagent changes to a lilac colour if proteins are present Required Practical: Investigate The Effect Of pH On Reaction Rate Of Amylase 16 Enzyme i) put a drop of iodine in each dimple of a spotting tray ii) add a pH buffer to a starch solution. place in a water bath A Method: iii) add amylase and pipette a couple of drops into the tray iv) record the time taken for the iodine to remain brown/orange v) repeat with a range of different pH buffer solutions The Lungs air travels via the trachea to the bronchi and then the alveoli 17 Lung Structure tubes in lungs that transfer air between the trachea and alveoli 18 Bronchi air sacs surrounded by a network of capillaries. oxygen and 19 Alveoli carbon dioxide diffuse between the alveoli and capillaries

The Heart The Heart Atrium Ventricle Double Pump Aystem Pacemaker Cells Artificial Pacemakers Blood Vessels Arteries Aorta	a muscular organ that pumps blood around the body blood enters via this top chamber on either side of the heart the lower chamber on each side of the heart - the right ventricle pumps blood to the lungs for gas exchange - the left ventricle pumps blood around the rest of the body located in the right atrium. control natural resting heart rate electrical devices used to correct irregularities in the heart rate
Atrium Ventricle Double Pump System Pacemaker Cells Artificial Pacemakers Blood Vessels Arteries	blood enters via this top chamber on either side of the heart the lower chamber on each side of the heart - the right ventricle pumps blood to the lungs for gas exchange - the left ventricle pumps blood around the rest of the body located in the right atrium. control natural resting heart rate
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Artificial Pacemakers Blood Vessels Arteries	
Pacemakers Blood Vessels Arteries	electrical devices used to correct irregularities in the heart rate
Arteries	
orta	a muscular tube that carries blood away from the heart
	the main artery distributing oxygenated blood through the body
ulmonary Artery	the artery carrying deoxygenated blood back to the lungs
/ein	thinner tube that carries blood back to the heart. contains valves
/ena Cava	the main vein carrying deoxygenated blood back to the heart
ulmonary Vein	the vein carrying oxygenated blood from the lungs to the heart
Coronary Arteries	
Capillaries	network of narrow blood vessels that connect the arteries and
	veins. 1 cell thick allowing substances to diffuse in and out
lood	
Blood	a tissue made of plasma, red and white blood cells and platelets
lasma	>90% water. carries substances around the body, including CO ₂
Red Blood Cells	bi-concave shape = large surface area
	carries oxygen around the body in haemoglobin
	do not have a nucleus
White Blood Cells	specialised cells that protect against illness and disease
Coronary Heart Di	
Coronary Heart	layers of fatty material build up inside and narrow the coronary
Disease (CHD)	arteries. this reduces blood flow and oxygen supply to the heart
itents	
	a metal mesh tube inserted in an artery to keep it open
tatins	medicine used to reduce blood cholesterol levels
Replacement /alves	leaky and faulty heart valves can be replaced using biological or mechanical valves
ransplant	a donor heart, or heart and lungs can be transplanted.
Artificial Lloart	mechanical pump used temporarily whilst waiting for a
rtificial Hoart	transplant
Artificial Heart	
Artificial Heart lealth	the state of physical and mental well-being
	a disease causing organism
	alth

46	Communicable	a disease caused by a pathogen that can be passed from one			
40	Disease	organism to another e.g. salmonella, measles, rose black spot			
	Non-	a disease not directly caused by a pathogen. may be inherited			
47	Communicable	but not passed through contact with another organism e.g.			
	Disease	diabetes, cancer, asthma, mental illness			
	Disease Interactions	communicable and non-communicable diseases can interact			
		weak immune system $ ightarrow$ tend to suffer more infectious diseases			
48		viruses living in cells $ ightarrow$ can be a trigger for cancers			
		immune reactions to a pathogen $ ightarrow$ can trigger allergies			
		severe physical ill health $ ightarrow$ can lead to depression/mental illness			
	The Effect Of Lifestyle On Some Non-Communicable Diseases				
49	Lifestyle Factors	diet, exercise, smoking, alcohol consumption affect health			
50	Environmental Factors	substances and conditions in the environment that affect health			
51	Risk Factors	lifestyle, environmental or genetic factors that link to an			
21		increased rate of a disease			
52	Causal	a risk factor that has been proven to increase the rate of a			
52	Mechanism	particular disease e.g. smoking and alcohol affect unborn babies			
53	Alcohol	affects liver and brain function and unborn babies (foetuses)			
54	Smoking	a causal mechanism in lung and heart diseases, affects a foetus			
55	Obesity	a risk factor for diabetes type ii, cancer and heart disease			
56	Exercise	regular exercise can reduce the risk of cancer and heart disease			
	Cancer				
57	Cancer	changes in cells that lead to uncontrolled growth and division			
58	Tumour	a growth of abnormal cells			
59	Benign Tumour	contained in one area, usually within a membrane, not cancer			
60	Malignant	can invade neighbouring tissues, able to spread through the			
00	Tumour	body in the blood and form secondary tumours. cancer			
61	Carcinogen	substance or radiation that can cause genetic mutations in DNA			
62	Genetic Factors	inherited genes that can increase the chance of types of cancer			
63	Risk Factors	lifestyle, environmental and genetic factors that can increase the			
03		likelihood of developing a type of cancer			
	Plant Tissues, Organs And Systems				
	Plant Cells				
64	Guard Cells	control gas exchange and water loss through the stomata			
65	Palisade Cells	column-shaped cells with many chloroplasts			
66	Spongy Mesophyll Cells	covered by a thin layer of water for gases to dissolve into			

67	Root Hair Cells	long and thin with a large surface area for the efficient uptake of water by osmosis and mineral ions by active transport	
	Plant Tissues		
68	Epidermis	outer tissue of a leaf - has a waxy cuticle to provide a protective barrier against mechanical injury, water loss and infection	
69	Palisade Mesophyll	under the epidermis. contains tightly packed palisade cells to absorb light efficiently	
70	Spongy Mesophyll	below the palisade mesophyll, spongy mesophyll cells are packed loosely for efficient gas exchange	
71	Xylem Tissue	hollow tubes (strengthened by lignin) transport water and mineral ions from the roots to the stems and leaves	
72	Transpiration	the stream of water from the roots, through the stem and out of the leaves	
73	Rate Of Transpiration	changing temperature, humidity, air movement and light intensity affect how quickly water moves through the plant	
74	Phloem Tissue	tubes of elongated cells transport dissolved sugars from the leaves to the rest of the plant for immediate use or storage	
75	Translocation	the movement of food molecules through phloem	
76	Meristem Tissue	found at the growing tips of shoots and roots	
	Plant Organ Systems		
77	Plant Organs	the roots, stem and leaves are each a type of plant organ	
78	Organ System	the roots, stem and leaves together form a plant organ system	