KS4 Biology 2 - Organisation

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

	The Heart	
20	The Heart	a muscular organ that pumps blood around the body
21	Atrium	blood enters via this top chamber on either side of the heart
22	Ventricle	the lower chamber on each side of the heart
23	Double Pump System	- the right ventricle pumps blood to the lungs for gas exchange - the left ventricle pumps blood around the rest of the body
24	Pacemaker Cells	located in the right atrium. control natural resting heart rate
25	Artificial Pacemakers	electrical devices used to correct irregularities in the heart rate
	Blood Vessels	
26	Arteries	a muscular tube that carries blood away from the heart
27	Aorta	the main artery distributing oxygenated blood through the body
28	Pulmonary Artery	the artery carrying deoxygenated blood back to the lungs
29	Vein	thinner tube that carries blood back to the heart. contains valves
30	Vena Cava	the main vein carrying deoxygenated blood back to the heart
31	Pulmonary Vein	the vein carrying oxygenated blood from the lungs to the heart
32	Coronary Arteries	the arteries that supply blood to the heart muscle itself
33	Capillaries	network of narrow blood vessels that connect the arteries and veins. 1 cell thick allowing substances to **diffuse** in and out
	Blood	
34	Blood	a tissue made of plasma, red and white blood cells and platelets
35	Plasma	>90% water. carries substances around the body, including CO_2
36	Red Blood Cells	bi-concave shape = large surface area carries oxygen around the body in haemoglobin do not have a nucleus
37	White Blood Cells	specialised cells that protect against illness and disease
	Coronary Heart Disease	
38	Coronary Heart Disease (CHD)	layers of fatty material build up inside and narrow the coronary arteries. this reduces blood flow and oxygen supply to the heart
39	Stents	a metal mesh tube inserted in an artery to keep it open
40	Statins	medicine used to reduce blood cholesterol levels
41	Replacement Valves	leaky and faulty heart valves can be replaced using biological or mechanical valves
42	Transplant	a donor heart, or heart and lungs can be transplanted.
43	Artificial Heart	mechanical pump used temporarily whilst waiting for a transplant
	Health	
44	Health	the state of physical and mental well-being
45	Pathogen	a disease causing organism

46	Communicable Disease	a disease caused by a pathogen that can be passed from one organism to another e.g. salmonella, measles, rose black spot
47	Non-Communicable Disease	a disease not directly caused by a pathogen. may be inherited but not passed through contact with another organism e.g. diabetes, cancer, asthma, mental illness
48	Disease Interactions	communicable and non-communicable diseases can interact weak immune system → tend to suffer more infectious diseases viruses living in cells → can be a trigger for cancers immune reactions to a pathogen →can trigger allergies severe physical ill health → 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 increased rate of a disease
52	Causal Mechanism	a risk factor that has been proven to increase the rate of a 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 Tumour	can invade neighbouring tissues, able to spread through the 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 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