




<b>Subject: Biology</b>					
<b>Examination Board: AQA</b>					
<b>Specification Code: 7401</b>					
<b>Section: 1 Biological Molecules</b>					
<div> <div> <div>Key:</div> <div> <div></div> <div>Target Grade</div> <div>No Knowledge at Target Grade</div> </div> </div> <div> <div>Secure at</div> <div>Insecure at Target Grade</div> </div> </div> <div>Students' Target ALPS + 1 Fine Levelled Grades</div>					<b>Date you have reviewed</b>
<b>Biological molecules</b>					
Describe what a mole is, and what is meant by a molar solution					
Explain bonding and the formation of molecules					
Describe polymerisation and state what macromolecules are					
Describe condensation and hydrolysis reactions					
Describe metabolism					
Describe how carbohydrates are constructed					
Describe the structure of monosaccharides					
Describe how to carry out the Benedict's test for reducing sugars and non-reducing sugars					
Explain how monosaccharides are linked together to form disaccharides					
Describe how $\alpha$ -glucose molecules are linked to form starch and glycogen					
Describe the test for starch					
Explain how $\beta$ -glucose molecules are linked together to form the polymer cellulose					
Explain how the molecular structures of starch, glycogen and cellulose relate to their function					
Describe the structure of triglycerides and how this relates to their function					
Describe the roles of lipids					
Describe the structure of a phospholipid and how this relates to their function					
Describe the test for a lipid					
Explain how amino acids are linked to form polypeptides - the primary structure of proteins					
Explain how polypeptides are arranged to form the secondary and then tertiary structure of proteins					
Explain how the quaternary structure of proteins is formed					
Describe the test for proteins					
Explain how enzymes speed up chemical reactions					
Describe how the structure of enzyme molecules relates to their function					
Explain the lock and key model of enzyme action					
Explain the induced fit-model of enzyme action					
Describe how the rate of an enzyme-controlled reaction is measured					
Explain how temperature affects the rate of an enzyme-controlled reaction					
Explain how pH affects the rate of an enzyme-controlled reaction					
Explain how substrate and enzyme concentration affect the rate of an enzyme-controlled reaction					
Describe the nature of enzyme inhibition					
Explain how competitive and non-competitive inhibitors affect the active site					
<b>Nucleic acids</b>					
Describe the structure of a nucleotide					
Describe the structure of RNA					
Describe the structure of DNA					
Describe the events which take place during DNA replication					
Describe the formation of a new polynucleotide strand					
Explain the semi-conservative process of DNA replication					
Define what energy is and why organisms need it					
Explain how ATP stores energy					
Describe how ATP is synthesised					
Describe the role of ATP in biological processes					
Describe the structure of the water molecule					
State the properties of the water molecule					
Explain the importance of the water molecule to living organisms					
Describe inorganic ions and their roles					

<b>Subject: Biology</b>						
<b>Examination Board: AQA</b>						
<b>Specification Code: 7401</b>						
<b>Section: 2 Cells</b>						
		<b>Date you have reviewed</b>				
<b>Key:</b>  <b>Secure at Target Grade</b>  <b>Insecure at Target Grade</b>  <b>No Knowledge at Target Grade</b>						
		<b>Students' Target ALPS + 1 Fine Levelled Grades</b>				
<b>Cell structure</b>						
Explain the principle of magnification and resolution						
Describe what cell fractionation is						
Explain how ultracentrifugation works						
Explain how electron microscopes work						
Explain the difference between a transmission electron microscope and a scanning electron microscope						
Describe the limitations of the transmission and the scanning electron microscope						
Explain how to calibrate an eyepiece graticule						
Explain how to measure cell size using an eyepiece graticule						
Learn how to calculate the size of a specimen and/or magnifications from drawings and photographs						
Describe the structure and functions of the nucleus, mitochondria, chloroplasts, rough and smooth endoplasmic reticulum, ribosomes, Golgi apparatus, Golgi vesicles and lysosomes						
Describe the structure and function of the cell wall in plants, algae and fungi						
Describe the structure and function of the vacuole in plants						
Describe the advantages of cellular differentiation						
Describe how cells are arranged into tissues						
Describe how tissues are arranged into organs						
Describe how organs are arranged into organ systems						
Describe the structure of the prokaryotic cell						
Distinguish between prokaryotic and eukaryotic cells						
Describe what mitosis is						
State when DNA replication takes place						
Explain the importance of mitosis						
Describe the three stages of the cell cycle						
Describe what happens during interphase						
Explain how mitosis is controlled						
Describe how cancer and its treatment relate to the cell cycle						
<b>Transport across cell membranes</b>						
Describe the structure of the cell-surface membrane						
Describe the functions of the various components of the cell-surface membrane						
Explain the fluid-mosaic model of cell membrane structure						
Explain what diffusion is and how it occurs						
Explain what affects the rate of diffusion						
Distinguish between facilitated diffusion and diffusion						
Describe the nature of osmosis						
State the water potential of pure water						
Describe the effect of solutes on water potential						
Explain how water potential affects water movement						
Explain what happens when animal cells and plant cells are placed into pure water						
Explain the process of active transport						
Describe the conditions required for active transport						
Describe the part villi and micro-villi play in absorption						
Explain how the products of carbohydrate digestion are absorbed in the ileum						
Explain the roles of diffusion, active transport and co-transport in the process						
Describe the main defence mechanisms of the body						
Explain how the body distinguishes between its own cells and foreign cells						
Describe the first line of defence against disease						
Explain the process of phagocytosis						
Describe the role of lysosomes in phagocytosis						
State the definition of an antigen						
Describe the two main types of lymphocyte						
Explain the roles of T cells (T lymphocytes) in cell mediated immunity						
Explain the role of B cells (B lymphocytes) in humoral immunity						
Explain the role of plasma cells and antibodies in the primary immune response						
Explain the role of memory cells in the secondary immune response						
Explain how antigenic variation affects the body's response to infection						
Describe the structure of an antibody						
Describe the structures of antibodies						
Describe the nature of monoclonal antibodies						
Explain how monoclonal antibodies are produced						
Explain how monoclonal antibodies are used to target specific substances and cells						
Describe the nature of vaccines						
Describe the feature of an effective vaccination programme						
Explain why vaccination rarely eliminates disease						
Discuss the ethical issues associated with vaccination programmes						
Describe the structure of the human immunodeficiency virus						
Explain how HIV replicates						
Explain how HIV can cause AIDS						
Describe the treatment and control of AIDS						
Explain how the ELISA test works						
Explain why antibiotics are ineffective against viruses						




<b>Subject: Biology</b>
<b>Examination Board: AQA</b>
<b>Specification Code: 7401</b>
<b>Section: 3 Organisms exchange substances with their environment</b>

	Date you have reviewed				
<p><b>Key:</b></p> <p><b>Insecure at Target Grade</b></p> <p><b>Grade</b></p>				<b>Secure at Target Grade</b>	<b>No Knowledge at Target</b>
<b>Students' Target ALPS + 1 Fine Levelled Grades</b>					
<b>Exchange</b>					
Explain how the size of an organism and its stucture relate to its surface area to volume ratio					
Describe how larger organisms increase their surface to volume ratio					
Explain how surfaces are specially adapted to facilitate exchange					
Describe how singel celled organisms exchange gases					
Explain how terrestrial plants and insects balance the need to exchange gases with the need to conserve water					
Explain how insects exchange gases					
Describe the structure of fish gills					
Describe how water is passed along fish gills					
Explain the difference between parallel flow and contercurrent flow					
Explain how countercurrent flow increases the rate of gas exchange					
Describe how plants exchange gases					
Describe the structure of a dicotyledonous plant leaf					
Explain the adaptations of leaves for efficient gas exchange					
Describe how the human gas-exchange system is arranged					
Explain the functions of the human gas-exchange system					
Explain how and why air is moved into the lungs when breathing in					
Explain how and why air is moved out of the lungs when breathing out					
Explain what is meant by pulmonary ventilation and how it is calculated					
Describe the essential features of exchange surfaces					
Explain how gases are exchanged in the alveoli of humans					
Describe the structure and function of the major parts of the digestive system					
Explain how the digestive system breaks down food both physically and chemically					
Explain the role of enzymes in digestion of carbohydrates, lipids and proteins					
Describe the structure of the illeum					
Explain how the illeum is adapted for the function of absorption					
Explain how monosaccharides and amino acids are absorbed					
Explain how triglycerides are absorbed					
<b>Mass Transport</b>					
Describe the structure and function of haemoglobin					
Explain the differences between haemoglobins in different organisms and the reasons for these differences					
Explain what is meant by loading and unloading of oxygen					
Describe the nature of an oxygen dissociation curve					
Explain the effect of carbon dioxide concentration on the curve and the reasons why					
Explain how the properties of the haemoglobins in different organisms relate to the environment and way of life of the organism concerned					
Explain why large organisms move substances around their bodies					
Describe the features of the transport systems of large organisms					
Describe the circulatory system of insects					
Describe the circulatory system of fish					
Describe the circulatory system of mammals					
Explain the relative efficiency of different circulatory systems					
Describe the appearance of the heart and its associated blood vessels					
Explain what the heart is made up of two adjacent pumps					
Explain how the structure of the heart is related to its functions					
Describe the stages of the cardiac cycle					
Explain how valves control the flow of blood through the heart					
Explain the volume and pressure changes which take place in the heart during the cardiac cycle					
Describe the structures of arteries, veins and capillaries					
Explain how the structure of the above vessels is related to its function					
Explain the structure of capillaries and how it is related to their function					
Define what transpiration is					
Explain how water moves through the leaf					
Explain how water moves up the xylem					
Explain the cohesion-tension theory of water transport					
Describe the mass-flow mechanism for the transport of organic substances in the phloem					
Summarise the evidence for and against the mass flow mechanism					
Describe the use of ringing experiments to investigate transport in plants					
Describe the use of tracer experiments to investigate transport in plants					
Explain the evidence that translocation of organic molecules occurs in the phloem					

<b>Subject: Biology</b>
<b>Examination Board: AQA</b>
<b>Specification Code: 7401</b>
<b>Section: 4 Genetic information, variation and relationships between organisms</b>

<div>Key:</div> <div>Grade</div> <div>No Knowledge at Target Grade</div> <div><div><div></div><div></div><div></div></div></div> <div><div>Secure at Target</div><div>Insecure at Target Grade</div></div>		Date you have reviewed				
		Students' Target ALPS + 1 Fine Levelled Grades				
DNA, genes and protein synthesis						
Describe the nature of a gene						
Explain how genes code for polypeptides						
Distinguish between the DNA in prokaryotic cells and the DNA in eukaryotic organisms						
Describe the structure of a chromosome						
Explain how genes are arranged in a DNA molecule						
Describe the nature of homologous chromosomes						
Explain what is meant by an allele						
Describe what the genetic code is and its main features						
Describe the structure of ribonucleic acid (RNA)						
Describe the structure and the role of messenger RNA (mRNA)						
Describe the structure and the role of transfer RNA (tRNA)						
Explain how pre-messenger RNA is produced from DNA in the process called transcription						
Describe how pre-messenger RNA is modified to form messenger RNA						
Explain how a polypeptide is synthesised during the process of translation						
Describe the roles of messenger RNA and transfer RNA in translation						
Genetic diversity and adaptation						
Describe gene mutations						
Explain how deletion and substitution of bases result in different amino acid sequences in polypeptides						
Explain why some mutations do not result in a changed amino acid sequence						
Describe what chromosome mutations are						
Describe why meiosis is necessary						
Describe the process of meiosis						
Explain how meiosis creates variation						
Explain why organisms are different from one another						
Describe what factors influence genetic diversity						
Explain how reproductive success affects allele frequency within a gene pool						
Explain how genetic diversity enables natural selection						
Describe what selection is						
Describe the environmental factors which exert selection pressure						
Explain what stabilising and directional selection are						
Biodiversity						
Explain the concept of what a species is						
Outline how species are named						
Explain how courtship is a precursor to mating						
Explain the principles of classification						
Explain how classification is related to evolution						
Describe what we understand by species diversity						
Explain how diversity index is used as a measure of species diversity						
Describe the impact of agriculture on species diversity						
Explain the balance between conservation and farming						
Explain the use of the following techniques in comparing genetic diversity within and between species: observable characteristics, base sequence of DNA, base sequence of mRNA, amino acid sequence of proteins						
Explain how immunological comparisons are used to investigate variations in proteins						
Describe how variation is measured						
Explain what sampling is and why it is used						
Describe the types of variation and their causes						
Explain what is meant by the mean and standard deviation						

<b>Subject: Biology</b>
<b>Examination Board: AQA</b>
<b>Specification Code: 7401</b>
<b>Section: 5 Skills in A level biology</b>

	Date you have reviewed				
<b>Key:</b> <b>Secure at Target Grade</b>  <b>Insecure at Target Grade</b>  <b>No Knowledge at Target Grade</b> 					
<b>Students' Target ALPS + 1 Fine Levelled Grades</b>					
<b>Mathematical skills</b>					
I know when I am using the correct units					
I understand how to use and convert to standard form					
I can convert to significant figures					
I can calculate a mean					
I can work out the median					
I can work out the mode					
I can calculate percentages					
I can substitute into equations					
I can rearrange equations					
I can estimate results					
I can calculate standard deviations					
I can calculate percentage error					
I know when to use a certain type of graph					
I know how to draw graphs correctly					
I can add error bars to plotted points					
I can calculate rates from a graph					
I can interpret scatter diagrams					
I can calculate probability					
I am confident I can choose the correct statistical test for my data					
I can calculate the circumference of a circle					
I can calculate the surface area of a sphere, a cylinder, a cube					
I can calculate the volume of a sphere, cylinder and a cube					
I can calculate pH					
I can calculate magnification					
I can calculate pulmonary ventilation rate					
I can calculate cardiac output					
I can calculate the species diversity index					
I can calculate the efficiency of energy transfer					
I can use the chi squared test					
I can use the t test					
I can calculate variance					