AQA Biology (8461) from 2016 Topic B4.5 Homeostasis and response				
Topic	**Student Checklist**	**R**	**A**	**G**
4.5.1 Homeostasis	Describe what homeostasis is and why it is important stating specific examples from the human body			
	Describe the common features of all control systems			
4.5.2 The human nervous system	State the function of the nervous system and name its important components			
	Describe how information passes through the nervous system			
	Describe what happens in a reflex action and why reflex actions are important			
	Explain how features of the nervous system are adapted to their function, including a reflex arc (inc all types of neurone and the synapse)			
	Required practical 7: plan and carry out an investigation into the effect of a factor on human reaction time			
	Bio ONLY: State the function of the brain and how it is structured, including identifying he cerebral cortex, cerebellum and medulla on a diagram of the brain			
	Bio ONLY: Describe the functions of different regions of the brain			
	Bio ONLY: State the function of the eye and how it is structured, including names of specific parts			
	Bio ONLY: Describe the functions of different parts of the eye, including relating structure to function			
	Bio ONLY: Describe what accommodation is, and how it is carried out			
	Bio ONLY: Explain what myopia and hyperopia are and how they are treated, including interpreting ray diagrams			
	Bio ONLY: Describe how body temperature is monitored and controlled			
4.5.3 Hormonal coordination in	Describe the endocrine system, including the location of the pituitary, pancreas, thyroid, adrenal gland, ovary and testis and the role of hormones			
	State that blood glucose concentration is monitored and controlled by the pancreas			
	Describe the body's response when blood glucose concentration is too high			
	Explain what type 1 and type 2 diabetes are and how they are treated			
	Describe how water, ions and urea are lost from the body			
	Describe the consequences of losing or gaining too much water for body cells			
	Describe how the kidneys produce urine			
	Describe how kidney failure can be treated by organ transplant or dialysis and recall the basic principles of dialysis			
	Describe what happens at puberty in males and females, inc knowledge of reproductive hormones			
	Describe the roles of the hormones involved in the menstrual cycle (FSH, LH and oestrogen)			
	Describe how fertility can be controlled by hormonal and non-hormonal methods of contraception (giving specific examples from the spec)			

4.1	*Bio ONLY: Describe hormone-linked plant responses, to include phototropism and gravitropism and the role of auxin*			
	Required practical 8: investigate the effect of light or gravity on the growth of newly germinated seedling			

AQA Biology (8461) from 2016 Topic B4.6 Inheritance, variation and evolution				
Topic	**Student Checklist**	**R**	**A**	**G**
4.6.1 Reproduction	Describe features of sexual and asexual reproduction			
	Describe what happens during meiosis and compare to mitosis			
	Describe what happens at fertilisation			
	Bio ONLY: Explain advantages of sexual and asexual reproduction			
	Bio ONLY: Describe examples of organisms that reproduce both sexually and asexually (malarial parasites, fungi, strawberry plants and daffodils)			
	Describe the structure of DNA and its role in storing genetic information inside the cell			
	Explain the term 'genome' and the importance of the human genome (specific examples from spec only)			
	Bio ONLY: Describe the structure of DNA, including knowledge of nucleotide units			
	Describe how characteristics are controlled by one or more genes, including examples			
	Explain important genetic terms: gamete, chromosome, gene, allele, genotype, phenotype, dominant, recessive, homozygous and heterozygous			
	Explain and use Punnet square diagrams, genetic crosses and family trees			
	Describe cystic fibrosis and polydactyly as examples of inherited disorders			
	Evaluate social, economic and ethical issues concerning embryo screening when given appropriate information			
	Describe how the chromosomes are arranged in human body cells, including the function of the sex chromosomes			
	Explain how sex is determined and carry out a genetic cross to show sex inheritance			
4.6.2 Variation and evolution	Describe what variation is and how it can be caused within a population			
	Describe mutations and explain their influence on phenotype and changes in a species			
	Explain the theory of evolution by natural selection			
	Describe how new species can be formed			
	Describe what selective breeding is			
	Explain the process of selective breeding, including examples of desired characteristics and risks associated with selective breeding			
	Describe what genetic engineering is, including examples, and how it is carried out			
	Explain some benefits, risks and concerns related to genetic engineering			
	Bio ONLY: Describe different cloning techniques, to include: tissue culture, cuttings, embryo transplants and adult cell cloning			
4.6.3 The development of understanding of genetics and evolution	*Bio ONLY: Describe the ideas proposed by Darwin in his theory of natural selection and explain why this theory was only gradually accepted*			
	Bio ONLY: Describe other inheritance-based theories that existed (apart from the theory of natural selection), and the problems with these theories			
	Bio ONLY: Describe the work of Alfred Russel Wallace			
	Bio ONLY: Explain how new species can be formed			
	Bio ONLY: Describe how our understanding of genetics has developed over time, to include knowledge of Mendel			
	Describe some sources of evidence for evolution			
	Describe what fossils are, how they are formed and what we can learn from them			
	Explain why there are few traces of the early life forms, and the consequences of this in terms of our understanding of how life began			
	Describe some of the causes of extinction			
	Describe how antibiotic-resistant strains of bacteria can arise and spread (inc MRSA)			
	Describe how the emergence of antibiotic-resistant bacteria can be reduced and controlled, to include the limitations of antibiotic development			

4.6.4 Classification	Describe how organisms are named and classified in the Linnaean system			
	Explain how scientific advances have led to the proposal of new models of classification, inc three-domain system			
	Describe and interpret evolutionary trees			

AQA Biology (8461) from 2016 Topic B4.7 Ecology				
Topic	**Student Checklist**	**R**	**A**	**G**
4.7.1 Adaptations, interdependence and competition	Recall what an ecosystem is			
	Describe which resources animals and plants compete for, and why they do this			
	Explain the terms 'interdependence' and 'stable community'			
	Name some abiotic and biotic factors that affect communities			
	Explain how a change in an abiotic or biotic factor might affect a community			
	Describe structural, behavioural and functional adaptations of organisms			
	Describe what an extremophile is			
4.7.2 Organisation of an ecosystem	Represent the feeding relationships within a community using a food chain and describe these relationships			
	Explain how and why ecologists use quadrats and transects			
	Describe and interpret predator-prey cycles			
	Required practical 9: measure the population size of a common species in a habitat. Use sampling to investigate the effect of one factor on distribution			
	Describe the processes involved in the carbon cycle			
	Describe the processes involved in the water cycle			
	Bio ONLY: Explain how temperature, water and availability of oxygen affect the rate of decay of biological material			
	Bio ONLY: Explain how the conditions for decay are optimised by farmers and gardeners, and the reasons for this			
	Bio ONLY: Describe how methane gas can be produced from decaying materials for use as a fuel			
	Bio ONLY: Required practical 10: investigate the effect of temperature on the rate of decay of fresh milk by measuring pH change			
	Bio ONLY: Explain how environmental changes can affect the distribution of species in an ecosystem (temperature, water and atmospheric gases)			
4.7.3 Biodiversity and the effect of human interaction on ecosystems	Describe what biodiversity is, why it is important, and how human activities affect it			
	Describe the impact of human population growth and increased living standards on resource use and waste production			
	Explain how pollution can occur, and the impacts of pollution			
	Describe how humans reduce the amount of land available for other animals and plants			
	Explain the consequences of peat bog destruction			
	Describe what deforestation is and why it has occurred in tropical areas			
	Explain the consequences of deforestation			
	Describe how the composition of the atmosphere is changing, and the impact of this on global warming			
	Describe some biological consequences of global warming			
	Describe both positive and negative human interactions in an ecosystem and explain their impact on biodiversity			
	Describe programmes that aim to reduce the negative effects of humans on ecosystems and biodiversity			
4.7.4 Trophic levels in an ecosystem	*Bio ONLY: Describe the different trophic levels and use numbers and names to represent them*			
	Bio ONLY: Describe what decomposers are and what they do			
	Bio ONLY: Construct pyramids of biomass accurately from data and explain what they represent			
	Bio ONLY: State how much energy producers absorb from the Sun and how much biomass is transferred			
	Bio ONLY: Explain how biomass is lost between trophic levels, including the consequences of this and calculate efficiency between trophic levels			
4.7.5 Food production	*Bio ONLY: Explain the term 'food security' and describe biological factors that threaten it*			
	Bio ONLY: Explain how the efficiency of food production can be improved			
	Bio ONLY: Explain the term 'factory farming', including examples, and ethical objections			
	Bio ONLY: Explain the importance of maintaining fish stocks at a level where breeding continues			
	Bio ONLY: Explain some methods that can help to conserve fish stocks			
	Bio ONLY: Describe how modern biotechnology is used in food production, including the fungus Fusarium as an example			
	Bio ONLY: Describe the uses of genetically modified organisms in insulin and food production			