Content of 4H Cambridge – Science in English

Module	Content	Objectives/extra
Excretion	• Excretory products • Nitrogenous waste • The human excretory system	• To be able to describe and explain the importance of the kidneys in excretion • To be able to outline how nitrogenous waste is produced in humans
Homeostasis	• Maintaining the internal environment • Control of body temperature • Control of blood glucose concentration	• To be able to define homeostasis and give examples of the various types found in humans • To be able to outline the link between diabetes and the control of blood glucose concentration
Reproduction in plants	• Asexual reproduction • Sexual reproduction • Sexual reproduction in flowering plants • Comparing sexual and asexual reproduction	• To be able to describe and explain the differences between sexual and asexual reproduction • To be able to identify parts of a plant that have a role in reproduction • To be able to explain the processes of miosis and mitosis
Reproduction in humans	• Human reproductive organs • Fertilisation and development • The menstrual cycle • Birth control • Sexually transmitted infection	• To be able to describe and explain the reproductive process in humans • To be able to outline differences between fertilisation and development of an embryo/fetus • To be able to describe the purpose of birth control • To be aware of different sexually transmitted infections
Inheritance	• Chromosomes • Cell division	• To be able to identify the importance of

	• Inheritance • Dna and protein synthesis	chromosomes in inheritance • To be able to explain the role of alleles in relation to genotypes and phenotypes • To be able to use genetic diagrams to predict the probability of offspring having certain traits • To be able to give a comprehensive account pf protein synthesis in humans
Variation and natural selection	• Variation • Adaptive features • Selection	• To be able to explain how variation occurs naturally in the environment • To be able to explain how 'selection pressure' causes organisms to develop adaptive features • To be able to outline the process of selection according to Darwin
Organism and their environment	• Ecology • Energy flow • Nutrient cycles • Population size	• To be able to analysis energy flow graphs and manipulate data to create population pyramids or biomass pyramids • To be able to explain the carbon and nitrogen cycles using flows, sinks and stores • To be able to outline how an organism's population size can affect it's role in the environment
Biotechnology	• What is biotechnology? • Using yeast • Making use of enzymes • Penicillin • Genetic engineering	• To be aware of the different types of biotechnology, yeast, lactose free and GM crops • To know the role and importance of enzymes in

		biotechnology – pectinase • To be able to understand and explain how genetic engineering occurs – ethical issues?
Humans and the environment	• Food production • Habitat destruction • Pullution • Conservation	• To be able to asses the impact of humans in theirs, and other's, environments • To be able to outline sources of pollution and suggest useful alternative energies • To be able to understand the importance of conservation of the environment