

TOPIC	SUB-HEADING	KEYWORDS	IGCSE CAMBRIDGE REFERENCES
Classification and evolution	Classification	Characteristics of living organisms, classification, the Five Kingdoms, viruses Flowering plants, monocotyledons, dicotyledons, arthropods, chordates, vertebrates Keys Species, binomial system, cladistics	Section I: 1, 2, 3
Ecosystems, cycles and energy flow	Energy and biomass in food chains	Interdependence, food chain, trophic levels, pyramid of biomass, energy losses	Section IV: 2 NB: relation to farming is covered in the clip 'Food security'
Ecosystems, cycles and energy flow	The carbon and water cycles	Carbon cycle, photosynthesis, respiration, decomposer, combustion, fossil fuel, water cycle	Section IV: 3
Ecosystems, cycles and energy flow	The nitrogen cycle	Nitrogen fixation, root nodules, lightening, decomposers, protein, urea, ammonia, nitrifying bacteria, nitrates, denitrifying bacteria	Section IV: 3
Ecosystems, cycles and energy flow	Pollution and environmental change	Population change, population growth curve, pollution, phosphates, nitrates, sulfur dioxide, eutrophication Deforestation, conservation	Section IV: 4, 5
Ecosystems, cycles and energy flow	Food security	Food security, famine Genetic modification Chemical fertilisers, pesticides, artificial selection	Section II: 6.3.2
Inheritance	Variation and inherited characteristics	DNA, chromosomes, genes, alleles, inherited characteristics. Continuous and discontinuous variation	Section III: 3.1 (part), 3.5 (part) NB: Down's syndrome is covered in the clip 'Meiosis' and sickle cell anaemia is covered in the clip 'Genetic disorders and genetic diagrams'
Inheritance	Genetic disorders and genetic diagrams	Cystic fibrosis, sickle cell, monohybrid cross, genetic diagram, Punnett square, pedigree, analyse outcomes	Section III: 3.4 (part)
Inheritance	Genes and inheritance	Dominant, recessive, homozygous, heterozygous, phenotype, genotype, monohybrid cross, genetic diagram, Punnett square, sex inheritance, codominance	Section III: 3.4
Keeping healthy	Drugs	Drug, heroin, effects of alcohol, effects of tobacco smoke	Section II: 10.5 NB: antibiotics are covered in the clip 'Antimicrobial agents and microbial resistance'
Keeping healthy	Heart disease	Coronary heart disease and causes	Section II: 6.3.1 (part), 7.2.1 (part)
Keeping healthy	Antimicrobial agents and microbial resistance	Antibacterials, antifungals, resistant strains, MRSA, antibiotic misuse	Section II: 10.5 (part)
Keeping healthy	Diet	Nutrients, carbohydrates, fats, proteins Food tests Deficiency diseases Food additives, colourings Balanced diet, malnutrition	Section II: 6.1, 6.3.1 NB: the use of microorganisms in the food industry is covered in the clip 'Making use of microbes'
Homeostasis	Homeostasis - balancing the internal environment	Homeostasis, thermoregulation, osmoregulation, blood glucose	Section II: 10.4 (part)
Homeostasis	Thermoregulation - balancing heat gain and loss	Thermoregulation, skin, sweat, blood vessels, hair. Vasoconstriction, vasodilation, negative feedback	Section II: 10.4 (part)

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Homeostasis	Controlling blood sugar levels	Insulin, glycogen, Type 1 diabetes, Type 2 diabetes, diet, obesity, BMI calculations. Role of glucagon	Section II: 10.4 (supplement)
Nerves and hormones	Hormones in our bodies	Hormones, endocrine gland, adrenaline, comparison with nervous control systems	Section II: 10.2 NB: the use of hormones in food production is discussed in the clip 'Food security'
Nerves and hormones	Tropisms - hormone control of plant growth	Plant hormones, phototropism, geotropism, auxin, cell elongation, interpret experiments, gibberellins	Section II: 10.3
Nerves and hormones	The nervous system	Nervous system, brain, spinal cord, sense organs, nerves, neurons, receptors Antagonistic muscles	Section II: 10.1 (part) NB: Reflex actions and the eye are covered in separate clips
Nerves and hormones	The reflex arc	Sensory, relay, motor neurone, synapse, myelin, neurotransmitter, reflex arc	Section II: 10.1 (part)
Nerves and hormones	The eye and vision	Structure and function of the eye, accommodation, pupil reflex, rods and cones	Section II: 10.1 (part)
Cells and cell division	Cells	Plant cell, animal cell, bacterial cell, chloroplast, vacuole, cell wall, membrane, mitochondria, cytoplasm, nucleus, specialised cells, magnification	Section II: 1, 2 (part), 3. NB: ciliated cells are covered in the clip 'Gas exchange and the lungs'
Cells and cell division	Cell division - mitosis	Mitosis, genetically identical body cells, growth, repair, asexual reproduction, cloning	Section III: 3.2
Cells and cell division	Cell division - meiosis	Meiosis and fertilisation - genetically different haploid gametes, fertilisation, diploid zygote	Section III: 3.3
Cells and cell division	Growth and development	Increase in size, length, mass, cell division, elongation, differentiation, growth in plants and animals	Section III: 2 NB: germination is covered in the clip 'Plant reproduction'
Cell processes	Diffusion, osmosis and active transport	Diffusion, osmosis, partially permeable membrane, active transport in roots	Section II: 4
Cell processes	Aerobic and anaerobic respiration	Aerobic respiration, role of circulatory system, capillaries, diffusion of oxygen, carbon dioxide and glucose, word equation, anaerobic respiration and word equation, lactic acid, oxygen debt	Section II: 8, 8.1, 8.2
Cell processes	Enzymes	Biological catalyst, enzymes in DNA replication, protein synthesis and digestion, factors influencing enzymes (temp, substrate conc., pH), specificity, lock and key hypothesis, denaturation, enzyme experiments	Section II: 5 (NB: uses of enzymes outside of the body is covered in 'Using enzymes in industry')
Photosynthesis	The leaf and photosynthesis	Structure of the leaf, chlorophyll, chloroplast, stomata. Photosynthesis, word equation, limiting factors (light, CO ₂ , temp) - experiments	Section II: 6.2.1. 6.2.2
Photosynthesis	Transpiration and plant transport	Transpiration, transport of water, glucose and minerals, active transport, xylem and phloem, root hair cells, translocation	Section II: 6.2.3, 7.1, 7.1.1, 7.1.2, 7.1.3
Tissues, organs and organ systems	Cells, tissues, organs and organ systems	Cells, tissues and organs, organ systems	Section II: 2 (part)
Tissues, organs and organ systems	Blood and circulatory system	Blood (red, white cells, plasma, platelets) Structure of the heart and function (named blood vessels and pumping chambers), valves and blood flow. Circulatory system (arteries, veins, capillaries) Lymphatic system	Section II: 7.2, 7.2.1 (part: heart disease is covered in the clip 'Heart disease'), 7.2.2, 7.2.3
Tissues, organs and organ systems	Gas exchange and the lungs	Gas exchange surfaces Parts of human respiratory system, inspired and expired air composition Breathing mechanism	Section II: 8.3 (NB: the effects of physical activity is covered in the clip 'the effects of exercise')
Tissues, organs and organ systems	Digestive system and digestive enzymes	Ingestion, egestion, parts (mouth oesophagus, stomach, small and large intestines, pancreas, liver, gall bladder), peristalsis, carbohydrases, proteases, lipases, role of bile, villi Teeth and dental decay Assimilation, role of liver, deamination	Section II: 6.3.3-6.3.7

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Tissues, organs and organ systems	The kidney and water balance	Waste products, urea, urinary system (renal artery, vein, kidney, ureters, bladder, urethra), dialysis, organ donation, nephron (glomerulus, Bowman's capsule, convoluted tubules, loop of Henle, collecting duct, urine formation and osmoregulation, ADH, pituitary gland, negative feedback	Section II: 9
Tissues, organs and organ systems	Effect of exercise on the body	Heart rate and breathing rate during exercise	Section II: 8.3 (part)
Biotechnology	Making use of microbes	Advantages of microbes, mycoprotein production with Fusarium, yoghurt production	Section II: 6.1 (part)
Biotechnology	Using enzymes in industry	Enzyme technology (chymosin, invertase, enzymes in washing powder), experiments - immobilised lactase, enzymes in food production	Section II: 5 (part)
Biotechnology	Genetic engineering	Recombinant DNA technology (insulin, restriction enzymes, ligase, sticky ends)	Section III: 3.7
Reproduction	Plant reproduction	Parts of the flower and their functions Pollination Structure of seeds, seed and fruit dispersal	Section III: 1.2.1
Reproduction	Human reproduction	Asexual/sexual reproduction Puberty, male reproductive system, sexual intercourse Development of the fetus, labour	Section III: 1.1, 1.2, 1.2.2 (part), 1.3 NB: the female reproductive system and the menstrual cycle are covered in the clip 'Hormone control of the menstrual cycle'
Reproduction	Hormone control of the menstrual cycle	Hormonal control of the menstrual cycle by oestrogen, progesterone, FSH, LH, negative feedback	Section III: 1.2.2 (part), 1.3 (part)
Reproduction	Controlling fertility	Birth control Infertility treatments (hormone treatments, artificial insemination, donor eggs and sperm) Sexually-transmitted diseases	Section III: 1.4, 1.5