

TOPIC	SUB—HEADING	KEYWORDS	IGCSE EDEXCEL REFERENCES
Classification and evolution	Classification and the variety of life	Characteristics of living organisms, classification, the Five Kingdoms, viruses	Section 1
Classification and evolution	Evolution by natural selection	Darwin, evolution, natural selection	Section 3: 3.30
Ecosystems, cycles and energy flow	Energy and biomass in food chains	Interdependence, food chain, trophic levels, pyramid of biomass, energy losses	Section 4: 4.4-4.7
Ecosystems, cycles and energy flow	The carbon and water cycles	Carbon cycle, photosynthesis, respiration, decomposer, combustion, fossil fuel, water cycle	Section 4: 4.8, 4.9
Ecosystems, cycles and energy flow	The nitrogen cycle	Nitrogen fixation, root nodules, lightening, decomposers, protein, urea, ammonia, nitrifying bacteria, nitrates, denitrifying bacteria	Section 4: 4.10
Ecosystems, cycles and energy flow	Fieldwork techniques	Population, community, quadrats	Section 4: 4.1-4.3
Ecosystems, cycles and energy flow	Pollution and environmental change	Pollution, greenhouses gases, sulfur dioxide, eutrophication, deforestation	Section 4: 4.11-4.17
Inheritance	Variation and inherited characteristics	DNA, chromosomes, genes, alleles, inherited characteristics, environmental variation, mutation	Section 3: 3.13-3.16, 3.28, 3.29, 3.31, 3.33
Inheritance	Genetic disorders and genetic diagrams	Cystic fibrosis, sickle cell, monohybrid cross, genetic diagram, Punnett square, pedigree, analyse outcomes	Section 3: 3.19
Inheritance	Genes and inheritance	Dominant, recessive, homozygous, heterozygous, phenotype, genotype, monohybrid cross, genetic diagram, Punnett square, sex inheritance, codominance	Section 3: 3.17, 3.18, 3.20-3.22
Keeping healthy	Heart disease	Coronary heart disease and causes	Section 2: 2.47 (part)
Keeping healthy	Antimicrobial agents and microbial resistance	Antibacterials, antifungals, resistant strains, MRSA, antibiotic misuse	Section 3: 3.32
Keeping healthy	Diet	Nutrients, carbohydrates, fats, proteins Food tests Balanced diet	Section 2: 2.5-2.7, 2.23-2.25, 2.32
Keeping healthy	Harmful microbes, vaccination and immunity	Immune system, phagocytes, lymphocytes Vaccination	Section 2: 2.60, 2.61
Homeostasis	Homeostasis - balancing the internal environment	Homeostasis, thermoregulation, osmoregulation, blood glucose	Section 2: 2.77, 2.78
Homeostasis	Thermoregulation - balancing heat gain and loss	Thermoregulation, skin, sweat, blood vessels, hair. Vasoconstriction, vasodilation, negative feedback	Section 2: 2.89
Nerves and hormones	Hormones in our bodies	Hormones, endocrine gland, adrenaline, comparison with nervous control systems	Section 2: 2.64 (part), 2.83 (part), 2.90

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Nerves and hormones	Tropisms - hormone control of plant growth	Plant hormones, phototropism, geotropism, auxin, cell elongation, interpret experiments, gibberellins	Section 2: 2.80-2.82
Nerves and hormones	The nervous system	Nervous system, brain, spinal cord, sense organs, nerves, neurons, receptors Antagonistic muscles	Section 2: 2.79, 2.83 (part), 2.84, 2.85
Nerves and hormones	The reflex arc	Sensory, relay, motor neurone, synapse, myelin, neurotransmitter, reflex arc	Section 2: 2.86
Nerves and hormones	The eye and vision	Structure and function of the eye, accommodation, pupil reflex	Section 2: 2.87, 2.88
Cells and cell division	Cells	Plant cell, animal cell, bacterial cell, chloroplast, vacuole, cell wall, membrane, mitochondria, cytoplasm, nucleus, specialised cells	Section 1: 1.2 (structure of animal, plant, bacterial and fungal cells) Section 2: 2.2-2.4, 2.59
Cells and cell division	Cell division - mitosis	Mitosis, genetically identical body cells, growth, repair, asexual reproduction, cloning	Section 3: 3.23, 3.24
Cells and cell division	Cell division - meiosis	Meiosis and fertilisation - genetically different haploid gametes, fertilisation, diploid zygote	Section 3: 3.25-3.27
Cells and cell division	Cloning	Micropropagation, cloning mammals	Section 5: 5.17-5.20
Cell processes	Diffusion, osmosis and active transport	Diffusion, osmosis, partially permeable membrane, active transport in roots	Section 2: 2.12-2.16
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 2: 2.33-2.37 Section 5: 5.6
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 2: 2.8-2.11
Photosynthesis	The leaf and photosynthesis	Structure of the leaf, chlorophyll, chloroplast, stomata. Photosynthesis, word equation, limiting factors (light, CO <sub>2</sub> , temp), stomata, gas exchange, use of glasshouses	Section 2: 2.17-2.20, 2.22, 2.39-2.43, 2.67 Section 5: 5.1, 5.2
Photosynthesis	Transpiration and plant transport	Transpiration, transport of water, glucose and minerals, active transport, xylem and phloem, root hair cells, translocation	Section 2: 2.21, 2.51-2.56
Tissues, organs and organ systems	Cells, tissues, organs and organ systems	Cells, tissues and organs, organ systems	Section 2: 2.1
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 2: 2.49, 2.50, 2.57-2.58, 2.62, 2.63, 2.65, 2.66
Tissues, organs and organ systems	Gas exchange and the lungs	Parts of human respiratory system, inspired and expired air composition Breathing mechanism Effects of smoking	Section 2: 2.44-2.48
Tissues, organs and organ systems	Reproduction	Asexual/sexual reproduction, fertilisation Pollination, seed germination Human reproductive systems, menstrual cycle, puberty, pregnancy	Section 3: 3.1-3.12

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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 Assimilation	Section 2: 2.26-2.31
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 2: 2.68-2.76
Tissues, organs and organ systems	Effect of exercise on the body	Heart rate and breathing rate during exercise	Section 2: 2.48, 2.64 (part)
Biotechnology	Making use of microbes	Advantages of microbes, mycoprotein production with Fusarium, yoghurt production, brewing	Section 5: 5.5, 5.7-5.8
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 5: 5.12-5.16
Farming and food security	Farming	Fertilisers, pesticides, biological control, fish farming	Section 5: 5.3, 5.4, 5.9
Farming and food security	Food security	Food security, famine Genetic modification Chemical fertilisers, pesticides, selective breeding	Section 5: 5.10, 5.11, 5.15