Learners Cloud

Education, Anywhere, Anytime

EDEXCEL GCSE BIOLOGY EXAMINATION BOARD COVERAGE

TOPIC	HEADING	EDEXCEL KEYWORDS	EDEXCEL CORE	EDEXCEL ADDITIONAL	EDEXCEL EXTENSION
Adaptation, classification and evolution	Classification	Classification, the Five Kingdoms, viruses. Chordates, vertebrates. Species, variation, keys, binomial, conservation, hybridisation	Y		
Adaptation, classification and evolution	Adaptations to the environment	Adaptations, extreme environments	Y		
Adaptation, classification and evolution	Evolution by natural selection	Darwin, evolution, natural selection, variation, over-production, struggle, survival, inheritance, change, validation of evidence	Y		
Adaptation, classification and evolution	Speciation	Speciation, geographical isolation	Y		
Behaviour	Rhythms in plants and animals	Plant photoperiodicity (germination, growth, reproduction), circadian rhythms			Y
Behaviour	Behaviour and conditioning	Mating behaviours and parental care - Selection of mate, courtship, mating strategies, behaviours in rearing young, benefits and risks of parental care. Behaviours (innate, imprinting, habituation, classical and operant conditioning), uses of conditioning, behaviour experiments, ethologists (Tinberg - gulls, Lorenz - geese, Fossey - gorillas, Goodall - Chimpanzees)			Y

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Behaviour	Communication and plant and animal interactions	Animal signals, (sound, pheromones, visual signals), plant communication with insects and other plants. Coevolution - flower structure and insect pollination, plant defence and animal metabolism			Y
Behaviour	Human evolution	Evidence for human evolution - fossils (Ardi, Lucy, Leakey's discovery), stone tools. Mitochondrial DNA, African Eve, tracking human migration and evolution, impact of climate change on human behaviour			Y
Biotechnology	Introduction to working with microbes	Biotechnology, cultivation of microbes, (asepsis, nutrients, temp, pH, oxygen, agitation)			Y
Biotechnology	Making use of microbes	Advantages of microbes, mycoprotein production with Fusarium, yoghurt production - experiments			Y
Biotechnology	Using enzymes in industry	Enzyme technology (chymosin, invertase, enzymes in washing powder), experiments - immobilised lactase, enzymes in food production		Y	
Biotechnology	Genetic engineering	Recombinant DNA technology (insulin, restriction enzymes, ligase, sticky ends), introducing insect resistance from Bacillus thuringiensis into crops			Y
Biotechnology	Biofuels	Biofuels - advantages and disadvantages			Y
Biotechnology	New technologies in biology	N/A			
Cell processes	Aerobic and anaerobic respiration	Respiration, role of circulatory system, capillaries, diffusion of oxygen, carbon dioxide and glucose, word equation, anaerobic respiration and word equation, lactic acid, EPOC		Y	
Cell processes	Diffusion, osmosis and active transport	Osmosis, partially permeable membrane, active transport in roots		Y	
Cells and cell division	Cells	Bacterial cell, plasmid, flagella, cell wall. Plant cell, chloroplast, vacuole, cell wall, membrane, mitochondria, cytoplasm, nucleus		Y	

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Cells and cell division	The microscope	Microscope, magnification calculations		Y	
Cells and cell division	Cell division - mitosis	Mitosis, genetically identical body cells, growth, repair, asexual reproduction, cloning		Y	
Cells and cell division	Cell division - meiosis	Meiosis and fertilisation - genetically different haploid gametes, fertilisation, diploid zygote		Y	
Cells and cell division	Cloning	Stages in cloning, advantages		Y	
Cells and cell division	Stem cells	Embryonic stem cells, stem cell research		Y	
Cells and cell division	Growth and development	Increase in size, length, mass, growth data, percentile charts, cell division, elongation, differentiation, growth in plants and animals.		Y	
DNA and genes	DNA, genes and the genetic code	Gene, DNA, coding, double strand, double helix, ATCG, DNA extraction, structure, Watson, Crick, Franklin, Wilkins, human genome, collaboration		Y	
DNA and genes	Genetic modification	Removal and insertion of genes, advantages of GM organisms (Vit A in rice, human insulin, herbicide resistance)		Y	
Drugs	Developing new drugs	N/A			
Drugs	Alcohol, cigarettes and health	Nicotine, tar, carcinogen, carbon monoxide, interpreting data, smoking and health issues, alcohol abuse, liver cirrhosis	Y		
Drugs	Drugs and their misuse	Drug definition, painkiller, hallucinogen, stimulant, depressant, reaction time	Y		
Ecosystems, cycles and energy flow	Energy and biomass in food chains	Interdependence, food chain, trophic levels, pyramid of biomass, chemosynthesis	Y		
Ecosystems, cycles and energy flow	Parasitism and mutualistic feeding relationships	Parasitism (fleas, lice, tapeworm, mistletoe) mutualism	Y		
Ecosystems, cycles and energy flow	Decay and the carbon cycle	Carbon cycle, photosynthesis, respiration, decomposer, combustion, fossil fuel	Y		
Ecosystems, cycles and energy flow	The nitrogen cycle	Nitrogen fixation, root nodules, lightening, decomposers, protein, urea, ammonia, nitrifying bacteria, nitrates, denitrifying bacteria	Y		

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Farming and food security	Food security	Food security, GM crops - costs and benefits, Agrobacterium tumefaciens as a vector, role of conventional breeding, pest management and genetic modification			Y
Farming and food security	Farming	N/A			
Fieldwork	Fieldwork techniques in biology	Fieldwork sampling techniques, (pooters, nets, traps, quadrats), measure environmental factors		Y	
Fieldwork	Fossil evidence for evolution	Evidence for evolution, fossil record, pentadactyl limb		Y	
Fieldwork	Soil	N/A			
Homeostasis	Homeostasis - balancing the internal environment	Homeostasis, thermoregulation, osmoregulation, blood glucose	Y		
Homeostasis	Thermoregulation - balancing heat gain and loss	Thermoregulation, skin, sweat, blood vessels, hair. Vasoconstriction, vasodilation, negative feedback	Y		
Homeostasis	Controlling blood sugar level and diabetes	Insulin, glycogen, Type 1 diabetes, Type 2 diabetes, diet, obesity, BMI calculations. Role of glucagon	Y		
Human impact on the environment	Pollution and environmental change	Population change, pollution, phosphates, nitrates, sulfur dioxide, eutrophication, indicator species	Y		
Human impact on the environment	Human impact on biodiversity	N/A			
Human impact on the environment	Sustainability	Recycling (metal, plastic, paper)	Y		
Inheritance	Variation and inherited characteristics	Chromosomes, genes, alleles, inherited characteristics. Continuous, discontinuous, normal distribution, causes of variation	Y		
Inheritance	Genetic disorders and genetic diagrams - Edexcel	Genetic disorders, sickle cell anaemia, cystic fibrosis	Y		
Inheritance	Genes and inheritance	Dominant, recessive, homozygous, heterozygous, phenotype, genotype, monohybrid cross, genetic diagram, Punnett square, pedigree, analyse outcomes	Y		

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Inheritance	Sex determination and sex-linked genetic disorders	Sex determination (including genetic diagram), sex-linked genetic disorders (haemophilia, colour blindness)			Y
Keeping healthy	Organ transplants	Ethics of transplantation and supply of organs	Y		
Keeping healthy	Pathogens and the body's defences against disease	Pathogens, infectious disease, examples of methods of transmission with examples including water, food, airborne contact, body fluids, vectors. Physical defences - skin, cilia, mucus, chemical - stomach acid, lysozyme	Y		
Keeping healthy	Antimicrobial agents and microbial resistance	Antibacterial plant chemicals, antiseptics, antibacterials, antifungals, resistant strains, MRSA, antibiotic misuse	Y		
Keeping healthy	Harmful microbes, vaccination and immunity	Exponential growth of bacteria, Louis Pasteur, aseptic techniques, experiments with microbes using resazurin, vaccination, Edward Jenner, pathogen, antigen, immune response, antibodies, memory lymphocytes, advantages and risks of immunisation, plant defences and impact of plant pests on food supply			Y
Keeping healthy	Diet	N/A			
Keeping healthy	Heart disease	N/A			
Nerves and hormones	Hormones in our bodies	Hormones, endocrine gland	Y		
Nerves and hormones	Tropisms - hormone control of plant growth	Plant hormones, phototropism, geotropism, auxin, cell elongation, interpret experiments, gibberellins	Y		
Nerves and hormones	Uses of plant hormones	Weed killer, rooting powder, seedless fruit, ripening		Y	
Nerves and hormones	The nervous system	Nervous system, brain, spinal cord, sense organs, nerves, neurons, receptors	Y		
Nerves and hormones	The reflex arc	Sensory, relay, motor neurone, synapse, myelin, neurotransmitter, reflex arc	Y		
Nerves and hormones	The synapse	Synapse	Y		
Nerves and hormones	The brain and mind	N/A			

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Nerves and hormones	Hormone control of the menstrual cycle	Hormonal control of the menstrual cycle by oestrogen, progesterone, FSH, LH, negative feedback			Y
Nerves and hormones	Controlling fertility	Infertility treatments (egg donation, IVF, surrogate mothers, hormones)			Y
Photosynthesis	The leaf and photosynthesis	Structure of the leaf, chlorophyll, chloroplast, stomata. Photosynthesis, word equation, limiting factors (light, CO2, temp) - experiments		Y	
Photosynthesis	Transpiration and plant transport	Transpiration, transport of water, glucose and minerals, active transport, xylem and phloem, root hair cells		Y	
Proteins and enzymes	Proteins	Proteins, sequence of amino acids, molecule shape		Y	
Proteins and enzymes	How proteins are made	Stages in protein synthesis, transcription, translation, mRNA, ribosomes, codons, amino acids, polypeptide		Y	
Proteins and enzymes	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		Y	
Tissues, organs and organ systems	Effect of exercise on the body	Heart rate and breathing rate during exercise, cardiac output equation, EPOC		Y	
Tissues, organs and organ systems	Cells, tissues, organs and organ systems	Cells, tissues and organs, organ systems		Y	
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)		Y	
Tissues, organs and organ systems	Gas exchange and the lungs	N/A			

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Tissues, organs and organ systems	Digestive system and digestive enzymes	Parts (mouth oesophagus, stomach, small and large intestines, pancreas, liver, gall bladder), peristalsis, carbohydrases, proteases, lipases, role of bile, villi, enzyme experiments, functional foods (probiotics, oligosaccharides, plant stanol esters)		Y	
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			Y
Tissues, organs and organ systems	The skeleton and joints	N/A			