Biology - Y10 & 11

Exam Board: AQA

Course Information Exam Board Website link: https://www.aqa.org.uk/subjects/science/gcse/biology-8461

Exam Info:
100% Examination at the end of Year 11
2 Exam Papers - Total Score out of 200
Paper 1 - Topics 1-4: 1 hour 45 mins (50% of final grade) 100 marks
Paper 2 - Topics 5-8: 1 hour 45 mins (50% of final grade) 100 marks

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Homework Expectations: 6-8 mark exam questions set week A plus educake set week B.

Long Term Plan: Year 10 - Topic 3, Topic 4 and Topic 7

Half Term	Autumn (1)	Autumn (2)	Spring (1)	Spring (2)	Summer (1)	Summer (2)
Topic	Infection and Response	Infection and Response	Bioenergetics	Ecology	Ecology	Revision and Assessments
Critical Key Vocabulary	Pathogen, toxin, bacteria, virus, fungi, protist, immune, antibodies, antitoxins, vaccine, memory cells, antibiotics.	Pathogen, toxin, bacteria, virus, fungi, protist, immune, antibodies, antitoxins, vaccine, memory cells, antibiotics.	Photosynthesis, rate, respiration, aerobic, anaerobic, metabolism.	Producer, consumer, predator, prey, habitat, niche, adaptation, population.	Producer, consumer, predator, prey, habitat, niche, adaptation, population.	

Year 10 Core Knowledge	• Microorganisms that cause disease are called pathogens. • Explain how viruses cause disease by invading specific cells, replicating, and bursting out of cells, killing them. • Bacteria cause disease by releasing toxins, they do not invade cells like viruses. • Recall that we can kill bacteria with antibiotics, but not viruses. • Describe how white blood cells engulf and digest pathogens. • Describe how WBCs neutralise toxins. • Describe how WBCs produce antibodies which destroy pathogens or mark them for destruction.White blood cells 'remember' pathogens that have previously infected the body. • Memory cells can produce antibodies more quickly and in higher quantities. • We can use vaccination to 'trick' the body into producing memory cells without the risk of infection. • The overuse of antibiotics can lead to resistance. • Describe what photosynthesis is and where it happens. • Describe the main ways plants can use glucose. • Describe the limiting factors of photosynthesis. • State that respiration takes place in all cells (those with mitochondria). • Recall the word and symbol equations for aerobic respiration. • Link respiration to enzymatic action and exothermic reactions - the importance of active sites and denaturing. • Explain that both aerobic and anaerobic respiration are essential for providing energy, and that aerobic respiration has a higher energy yield so is preferable for animals and plants. • Explain muscle fatigue and recovery periods, linked to oxygen debt and lactic acid build up. • Explain that enzymes are important biological catalysts that lower the activation energy for metabolic reactions.

Year 11 - Topic 5 and Topic 6

Half Term	Autumn (1)	Autumn (2)	Spring (1)	Spring (2)	Summer (1)
Topic	Homeostasis	Homeostasis	Genetics	Genetics	Revision
Critical Key Vocabulary	Neuron, reflex, synapse, receptor, effector, feedback, insulin, glucagon, ADH, osmosis, pituitary, menstrual, LH, FSH, oestrogen, progesterone.	Neuron, reflex, synapse, receptor, effector, feedback, insulin, glucagon, ADH, osmosis, pituitary, menstrual, LH, FSH, oestrogen, progesterone.	DNA, gene, chromosome, inherited, meiosis, variation, selection, evolution, adaptation, speciation, cystic fibrosis, polydactyly, allele, dominant, recessive.	DNA, gene, chromosome, inherited, meiosis, variation, selection, evolution, adaptation, speciation, cystic fibrosis, polydactyly, allele, dominant, recessive.	

Year 11 Core Knowledge	• Information is passed around the body in nerves. • Nerves are connected by small gaps called synapses, which slow down nerve transmission. • Information can also be sent round the body by hormones, but this is slower and longer acting. • Hormones control the menstrual cycle (FSH, LH, oestrogen and progesterone). • Hormones also control glucose levels in the blood (insulin and glucagon), and water levels in the body (ADH). • Hormones are released by glands and act on target cells, which have specific receptors that are complementary to specific hormones, allowing them to act only on certain cells/tissues. • DNA is a long polymer that stores information. • DNA contains genes, which code for proteins, and therefore traits/characteristics. • Mutations result in variation, which in turn leads to selection pressure and 'survival of the fittest' • Organisms that are best adapted to their environment are more likely to survive, reproduce and pass on favoured alleles. • Some diseases are caused by genes, such as cystic fibrosis and polydactyly. • Alleles can be either dominant or recessive.

Grade Descriptors:

Grade	Descriptors
9	To achieve grade 9, students' evidence will show that they have securely met all the statements within the grade 8 descriptor, with stronger performance in most or all aspects of the grade 8 statements.
8	To achieve grade 8, candidates will be able to: • demonstrate relevant and comprehensive knowledge and understanding and apply these correctly to both familiar and unfamiliar contexts using accurate scientific terminology • develop accurate, logical and detailed descriptions, explanations and arguments • use a range of mathematical skills to perform complex, multi-step scientific calculations • critically analyse qualitative and quantitative data and draw logical, well-evidenced conclusions • critically evaluate and refine methodologies, and judge the validity of scientific conclusions.
7	To achieve grade 7, students' evidence will show that they have securely met all the statements within the grade 6 descriptor, with stronger performance in most or all aspects of the grade 6 statements. However, their evidence does not meet the minimum requirements of most of the grade 8 statements.
6	To achieve grade 6, candidates will be able to: • demonstrate accurate and relevant knowledge and understanding and apply these mostly correctly to both familiar and unfamiliar contexts using accurate scientific terminology • develop accurate, logical and detailed descriptions and straightforward explanations • use a range of mathematical skills to perform multi-step scientific calculations • analyse qualitative and quantitative data and draw logical conclusions, supported by evidence • evaluate methodologies to suggest improvements and developments to experimental methods, and comment on the accuracy and validity of scientific conclusions.
5	To achieve grade 5, candidates will be able to: • demonstrate mostly accurate and appropriate knowledge and understanding and apply these mostly correctly to familiar and unfamiliar contexts, using mostly accurate scientific terminology • develop mostly accurate and logical descriptions, which includes some relevant detail and simple explanations • use appropriate mathematical skills to perform multi-step calculations • analyse qualitative and quantitative data and draw plausible conclusions supported by some evidence • evaluate methodologies to suggest improvements to experimental methods, and comment on the accuracy of scientific conclusions.
4	To achieve grade 4, candidates will be able to: • demonstrate some accurate and appropriate knowledge and understanding and apply these to some familiar and unfamiliar contexts, using some accurate scientific terminology • develop some logical descriptions, which includes some accurate and relevant detail • use appropriate mathematical skills to perform calculations • interpret qualitative and quantitative data and draw conclusions supported by some evidence • suggest improvements to experimental methods, and comment on the accuracy of scientific conclusions.

3	Characteristics that differentiate a grade 3 from a grade 4: • correct answers more likely to address familiar contexts than unfamiliar contexts • correct answers more likely where prompts and scaffolding are provided • descriptions are often partial and lacking relevant detail • perform some calculations when scaffolding is given • draw conclusions from qualitative or quantitative data, but evidence to support may not be clear or present • make some comments relating to experimental methods, but may not demonstrate an understanding of how to improve the experimental method or the accuracy of scientific conclusions.
2	To achieve grade 2, candidates will be able to: • demonstrate some relevant scientific knowledge and understanding using limited scientific terminology • perform some basic calculations • draw simple conclusions from qualitative or quantitative data • make basic comments relating to experimental methods.
1	To achieve a grade 1, students' evidence will show that they have demonstrated engagement with sufficient content, achieved some credit across elements of the specification content and achieved credit in some assessment objectives. Where the evidence for a student does not support this, the student should be graded unclassified (U).