

KS5 Biology

- This document should be viewed in conjunction with the current academic year teaching schedule, to see which topics are taught by which teacher and the overall sequence.
- Students follow a homework workbook schedule each week, which they self assess, and this is checked once per fortnight by NH to make sure students are on track.
- The first marked assessment is the initial exam.

UNIT 1 – BIOLOGICAL MOLECULES

Lesson	Chapter	Lesson Topic	Assessment
1	1 Biological Molecules	1.1 Introduction to Biological Molecules	
2		1.2 Carbohydrates – Monosaccharides	
3		1.3 Carbohydrates – Disaccharides and Polysaccharides	Teacher FAR marking of practice exam questions.
4		1.3a Calibration Curves	
5		1.4 Starch, Glycogen, and Cellulose	
6		1.5 Lipids	
7		1.5a Lipids (Part 2)	Teacher FAR marking of lipids homework questions.
8		1.6 Proteins	
9		1.6a Chromatography	
10		1.6b Proteins (Part 2)	Teacher FAR marking of protein structure exam question
11		1.7 Enzyme Action	
12		1.8a Factors Affecting Enzyme Action	
13		1.8b Factors Affecting Enzyme Action (Part 2)	Teacher FAR marking of enzymes question
14		1.9 Enzyme Inhibition	
15		1.10 Required Practical 1	Teacher marking of required practical 1 write-up.
1	2 Nucleic Acids	2.1a Structure of DNA	
2		2.1b Structure of RNA	
3		2.2 DNA Replication	
4		2.3 Energy and ATP	
5		2.4 Water and its Functions	
6		End of Unit 1 Exam	Teacher marking of Unit 1 Exam

UNIT 2 – CELLS

Lesson	Chapter	Lesson Topic	Assessment
1	3 Cell Structure	3.1 Methods of Studying Cells	
2		3.2 The Electron Microscope	
3		3.3 Microscope Measurements and Calculations	
4		3.4 Eukaryotic Cell Structure	
5		3.5 Cell Specialisation and Organisation	Teacher FAR marking of exam question on specialised cells.
6		3.6 Prokaryotic Cells and Viruses	
7		3.7 Mitosis	
8		3.7 Mitosis Required Practical	Teacher marking of required practical 2.
9		3.8 The Cell Cycle	
10		Chapter 3 End of Unit Test	Teacher FAR marking of end of Unit Test
1	4 Transport Across Cell Membranes	4.1 Structure of the Cell-Surface Membrane	
2		4.2 Diffusion	Teacher FAR marking of exam question on diffusion
3		4.2 Required Practical 4	Teacher marking of required practical 4
4		4.3 Osmosis	
5		4.3 Required Practical 3	Teacher marking of required practical 3
6		4.4 Active Transport	
7		4.5 Co-Transport and Absorption of Glucose in the Ileum	
8		End of Chapter 4 Test	Teacher marking of end of chapter test
1	5 Cell Recognition and the Immune System	5.1 Defence Mechanisms	
2		5.2 Phagocytosis	
3		5.3 T-Lymphocytes and Cell-Mediated Immunity	
4		5.4 B-Cells and Humoral Immunity	
5		5.5 Antibodies	
6		5.6 Vaccination	
7		5.7 The Human Immunodeficiency Virus	Teacher FAR marking of exam question on HIV

8		End of Chapter 5 test	Teacher marking of end of chapter 5 test
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UNIT 3 - EXCHANGE

Lesson	Chapter	Lesson Topic	Assessment
1	6 Exchange	6.1 Exchange Between Organisms and their Environments	
2		6.2 Gas Exchange in Single-Celled Organisms and Insects	
3		6.3 Gas Exchange in Fish	Teacher FAR marking of exam questions on fish gills.
4		6.4 Gas Exchange in the Leaf of a Plant	
5		6.5 Limiting Water Loss	
6		6.6 Structure of the Human Gas Exchange System	
7		6.7 The Mechanism of Breathing	Teacher FAR marking of exam question on ventilation.
8		6.8 Exchange of Gases in the Lungs	
9		6.9 Enzymes and Digestion	
10		6.10 Absorption of the Products of Digestion	
11			End of chapter 6 test
1	7 Mass Transport	7.1 Haemoglobin	
2		7.2 Transport of Oxygen by Haemoglobin	
3		7.3 Circulatory System of a Mammal	
4		7.4 The Structure of the Heart	Teacher marking of required practical 5 – heart dissection.
5		7.5 The Cardiac Cycle	
6		7.6 Blood Vessels and their Functions	
7		7.7 Transport of Water in the Xylem	
8		7.8 Transport of Organic Substances in the Phloem	
9		7.9 Investigating Transport in Plants	Teacher FAR marking of exam question on transport in plants.
10			End of Chapter 7 test

UNIT 4 – GENETICS

Lesson	Chapter	Lesson Topic	Assessment
1	8 DNA, Genes, and Protein Synthesis	8.1 Genes and the Genetic Code	
2		8.2 DNA and Chromosomes	
3		8.3 Structures of Ribonucleic Acid	
4		8.4 Polypeptide Synthesis – Transcription and Splicing	
5		8.5 Polypeptide Synthesis - Translation	
1	9 Genetic Diversity	9.1 Gene Mutation	
2		9.2 Meiosis and Genetic Variation	Teacher FAR marking of exam questions on meiosis.
3		9.3 Genetic Diversity and Adaptation	
4		9.4 Types of Selection	
5		Required Practical 6	Teacher marking of required practical 6.
1	10 Biodiversity	10.1 Species and Taxonomy	
2		10.2 Diversity Within a Community	Teacher FAR marking of exam questions.
3		10.3 Species Diversity and Human Activities	
4		10.4 Investigating Diversity	
5		Quantitative Investigations of Variation	

UNIT 5 – ENERGY TRANSFERS

Lesson	Chapter	Lesson Topic	Assessment
1	11 Photosynthesis	11.1 Overview of Photosynthesis	
2		11.1a Required Practical 7	Teacher marking of required practical 7.
3		11.2 The Light-Dependent Reaction	Teacher FAR marking of exam question on the light dependent reaction.
4		11.2a Required Practical 8	Teacher marking of required practical 8.
5		11.2b More Statistical Tests	
6		11.3 The Light-Independent Reaction	
1	12 Respiration	12.1 Glycolysis	
2		12.2 Link Reaction and Krebs Cycle	
3		12.3 Oxidative Phosphorylation	Teacher FAR marking of exam question.
4		12.4 Anaerobic Respiration	
5		Test on Photosynthesis and Respiration	Teacher marking of end of topics test.
1	13 Energy and Ecosystems	13.1 Food Chains and Energy Transfer	
2		13.2 Energy Transfer and Productivity	Teacher FAR marked exam questions.
3		13.3 Nutrient Cycles – Phosphorus Cycle	
4		13.3 Nutrient Cycles – Nitrogen Cycle	
5		13.4 Use of Natural and Artificial Fertilisers	Teacher FAR marking of exam questions
6		13.6 Environmental Issues Concerning Use of Nitrogen-Containing Fertilisers	
7		End of chapter 13 test	Teacher marking of end of chapter 13 test.

UNIT 6 – RESPONDING TO CHANGE

Lesson	Chapter	Lesson Topic	Assessment
1	14 Response to Stimuli	14.1 Survival and Response	Teacher FAR marking of exam question on taxis in worms.
2		Required practical 10	Teacher FAR marking of required practical 10.
3		14.2 Plant Growth Factors	
4		14.3 A Reflex Arc	
5		14.4 Receptors	
6		14.5 Control of Heart Rate	
7		End of chapter 14 test	Teacher marking of end of chapter 14 test
<p>This is normally the point reached by the end of Year 12. This is when end of Year 12 exams usually occur. Students sit AS papers 1 and 2, which assesses the content of units 1-4. These exams are teacher marked and graded.</p>			
1	15 Nervous Coordination and Muscles	15.1 Neurones and Nervous Coordination	
2		15.2 The Nerve Impulse	Teacher FAR marking of exam question on action potentials.
3		15.3 Passage of an Action Potential	
4		15.4 Speed of the Nerve Impulse	Teacher FAR marking of work linked to a reaction times practical.
5		15.5 Structure and Function of Synapses	
6		15.6 Transmission Across a Synapse	
7		15.7 Structure of Skeletal Muscle	
8		15.8 Contraction of Skeletal Muscle	
1	16 Homeostasis	16.1 Principles of Homeostasis	
2		16.2 The Principles of Feedback Mechanisms	
3		16.3 Hormones and the Regulation of Blood Glucose	
4		16.4 Diabetes and its Control	
5		Required Practical 11	Teacher marking of required practical 11.
6		16.5 Control of Blood Water Potential	
7		16.6 Role of the Nephron in Osmoregulation	
8		16.7 The Role of Hormones in Osmoregulation	Teacher FAR marking of exam questions on the kidney
9		End of chapters 15 and 16 test	Teacher marking of end of chapters 15 and 16 test

UNIT 7 – GENETICS, POPULATIONS, EVOLUTION, AND ECOSYSTEMS

Lesson	Chapter	Lesson Topic	Assessment
1	17 Inherited Change	17.1 Studying Inheritance	
2		17.2 Monohybrid Inheritance	
3		17.3 Probability and Genetic Crosses	
4		17.4 Dihybrid Inheritance	Teacher FAR marking of dihybrid cross questions
5		17.5 Co-Dominance and Multiple Alleles	
6		17.6 Sex Inheritance and Sex Linkage	
7		17.7 Autosomal Linkage	Teacher FAR marking of practice cross questions.
8		17.8 Epistasis	
9		17.9 The Chi-Squared Test	
10		Additional assessed practical on human traits	Teacher marking of practical write up.
1	18 Populations and Evolution	18.1 Population Genetics	Teacher FAR marking of Hardy-Weinberg exam questions.
2		18.2 Variation in Phenotype	
3		18.3 Natural Selection	
4		18.4 Effects of Different Forms of Selection on Evolution	
5		18.5 Isolation and Speciation	
6		End of chapters 17 and 18 test.	Teacher marking of end of chapters 17 and 18 test.
1	19 Population in Ecosystems	19.1 Populations and Ecosystems	
2		19.2 Variation in Population Size	
3		19.3 Competition	
4		19.4 Predation	
5		19.5 Investigating Populations	
6		Required Practical 12	Teacher marking of required practical 12.
7		19.6 Succession	Teacher FAR marking of succession exam questions.

8		19.7 Conservation of Habitats	
9		End of chapter 19 test	Teacher marking of end of chapter 19 test.

UNIT 8 – THE CONTROL OF GENE EXPRESSION

Lesson	Chapter	Lesson Topic	Assessment
1	20 Gene Expression	20.1 Gene Mutations	Teacher FAR marking of exam questions on mutations.
2		20.2 Stem Cells and Totipotency	
3		20.3 Regulation of Transcription and Translation	Teacher FAR marking of exam question on oestrogen.
4		20.4 Epigenetic Control of Gene Expression	
5		20.5 Gene Expression and Cancer	
6		20.6 Genome Projects	
7		End of chapter 20 test	Teacher marking of end of chapter 20 test.
1	21 Recombinant DNA Technology	21.1 Producing DNA Fragments	
2		21.2 In Vivo Gene Cloning	
3		21.3 In Vitro Gene Cloning	Teacher FAR marking of exam questions on PCR.
4		21.4 Locating Genes, Genetic Screening, and Counselling	
5		21.5 Genetic Fingerprinting	
6		End of chapter 21 test.	Teacher marking of end of chapter 21 test.