

Year 12 Exam Week Preparation Template

Year Group:	12
Subject:	Applied Human Biology

Details of exam

Paper to be sat:	1x 1hr30 minutes paper (80 marks)
Topics to be covered in the exam:	<p>A1 Cells, tissues and biological molecules</p> <ul style="list-style-type: none"> • General structure and function of biological molecules: <ul style="list-style-type: none"> - carbohydrates - proteins, to include primary, secondary, tertiary and quaternary structures of globular and fibrous proteins - Triglycerides - Glycoproteins. • Structure and function of specific biological molecules: <ul style="list-style-type: none"> - alpha (α) and beta (β) glucose - deoxyribonucleic acid (DNA) - ribonucleic acid (RNA), to include messenger RNA (mRNA) and transfer RNA (tRNA) - adenosine triphosphate (ATP) - collagen. • Cellular ultrastructure and function, to include recognition in light and electron micrographs: <ul style="list-style-type: none"> - nucleus, nucleolus, mitochondria, rough and smooth endoplasmic reticulum (ER), Golgi apparatus, vesicles, conventional lysosomes, 80S ribosomes, centrosomes - fluid mosaic model of plasma membrane - calculation of magnification and size of cells and organelles, including conversion between millimetres (mm), micrometres (μm) and nanometres (nm). • Transport of substances into and out of cells, including reference to drug delivery, cell recognition and signalling: <ul style="list-style-type: none"> - active and passive transport o diffusion - endocytosis, exocytosis and phagocytosis - osmosis. • Cellular activities, to include function, reactants, products and locations: <ul style="list-style-type: none"> - stages in aerobic and anaerobic respiration, to include glycolysis, link reaction and Krebs cycle. Learners are not expected to be able to describe the chemical structures of chemical intermediates in these processes beyond recall of the number of carbon atoms in each. - enzyme-controlled reactions as modelled by ATPase. • Stages and cellular activities during the cell cycle and divisions: <ul style="list-style-type: none"> - gap and synthesis stages in interphase – - haploid and diploid cells – - relative potency of cells, including somatic. • Chromosome formation and nuclear division, to include the recognition of each stage from images: <ul style="list-style-type: none"> - phases of mitosis and meiosis: interphase, prophase, metaphase, anaphase, telophase

- homologous and non-homologous chromosomes.
 - Principles of homeostasis, to include negative feedback loops.
 - Control of body temperature and physiological responses to extremes of temperature, to include hypothermia, hyperthermia, burns and frostbite.
- A2 Nervous system**
- Sensory, motor and relay neurones.
 - Central and peripheral nervous system.
 - Transmission of action potential to include:
 - the role of sodium and potassium ions in controlling membrane potential
 - effect of myelination on transmission speeds.
 - Synaptic transmission:
 - structure of the synapse, to include: presynaptic neurone, post synaptic neurone, synaptic cleft
 - role of neurotransmitters in synaptic transmission (named examples not required).
 - Reflex actions and reflex arcs.
- A3 Cardiovascular and respiratory system**
- Circulatory and respiratory system structure and function:
 - heart, to include vascularisation, innervation, chambers, valves and direction of blood flow
 - lungs, to include trachea, bronchi, bronchioles, alveoli
 - blood composition, to include red blood cells, white blood cells, plasma, platelets
 - blood vessels, including arteries, arterioles, capillary networks, venules, veins
 - pulmonary and systemic circulation
 - lymph nodes, lymphatic vessels
 - ventilation and gas exchange
 - exchange of substances between blood and tissues
 - formation of tissue fluid and lymph
 - regulation of heart rate and blood pressure.
 - Causes and common symptoms of coronary heart disease (CHD), stroke, chronic obstructive pulmonary disease (COPD), hypertension and hypotension.
- C1 Gene expression**
- Transcription of DNA to RNA, to include reference to role of RNA polymerase.
 - Translation and splicing of RNA to produce proteins to include codons, anticodons, introns and exons.
 - Hereditary and acquired genetic mutations.
- C2 Genetic disorders and diagnosis**
- Understand the terms allele, dominant, recessive, genotype, phenotype, heterozygous, homozygous, sex linkage, carrier, affected/sufferer, non-affected/non-sufferer.
 - Genetic and chromosomal disorders, to include cystic fibrosis (CF), Huntington's, Down's syndrome, haemophilia.
 - Characteristics of benign and malignant tumour growth. Characteristics are limited to behaviour on a cellular level or greater.
 - Effects of mutations in oncogenes and tumour suppressing genes.
 - Interpretation of genetic diagrams, to include familial pedigrees.

	<ul style="list-style-type: none"> • Methods and limitations of obtaining DNA samples, to include swabs and body fluids. Learners are not expected to know how DNA is extracted from samples or to be able to describe the process of DNA sequencing. • Diagnostic tests for genetic and chromosomal disorders, to include amniocentesis and chorionic villus sampling. Learners are required to describe diagnostic tests limited to how and when samples are taken and the interpretation of the results in the context of health of the foetus

Materials to support your revision

Link to Online Resources:	<p>Students have paper copies of the unit 1 student booklet but the electronic version can be found here:</p> <p>https://qualifications.pearson.com/content/dam/pdf/BTEC-Nationals/Applied-Human-Biology/2018/Support-resources/Student%20resource%20-%20Unit%201%20Principles%20of%20Applied%20Human%20Biology.pdf</p> <p>This resource has all of the content required for Unit 1.</p> <p>All lesson materials have been made available on Teams. Students have been provided with booklets comprising of all the content taught in Unit 1. They also have access to a booklet of exam style questions.</p>
Link to exemplar questions or past papers to use:	<p>Assessment Materials can be found here:</p> <p>https://qualifications.pearson.com/en/qualifications/btec-nationals/applied-human-biology.coursematerials.html#%2FfilterQuery=category:Pearson-UK:Category%2FSpecification-and-sample-assessments</p> <p>Past papers and mark schemes found here:</p> <p>https://qualifications.pearson.com/en/qualifications/btec-nationals/applied-human-biology.coursematerials.html#filterQuery=category:Pearson-UK:Category%2FExternal-assessments&filterQuery=category:Pearson-UK:Unit%2FUnit-1</p>
Link to model answers or mark schemes:	See above