West Park School

Triple Biology

GCSE Examination Summer 2025

In readiness for your mock examination in Biology you must **LEARN** and **REVISE** the following content and skills:

Triple only content.

Biology Paper 1

Cell Biology

- Cell structure - animal, plant and bacterial cells.
- Cell specialisation and differentiation.
- Microscopy – light and electron microscopes.
- *Culturing microorganisms – Bacterial growth and aseptic technique.*
- Cell division – Chromosomes, mitosis and the cell cycle, stem cells.
- Cloning – benefits of plant cloning, method and risks of therapeutic cloning.
- Transport in cells – Diffusion, osmosis and active transport.

Organisation

- Principles of organisation – cells, tissues, organs, organ systems.
- The human digestive system.
- The heart, blood vessels, blood and coronary heart disease.
- Health issues including the effect of lifestyle on health.
- Cancer – benign and malignant tumours.
- Plant tissues – epidermal tissue, palisade and spongy mesophyll and xylem and phloem.
- Plant organs e.g. leaves and plant organ systems.
- Plant transport – transpiration & translocation.

Infection and Response

- Communicable (infectious) disease – bacteria, viruses, protists and fungi.
- Antibiotics and painkillers – uses of these types of drug and the problems associated with antibiotic resistance.
- Human defence systems and vaccination.
- Discovery and development of drugs – the stages used to develop and test new drugs. Traditional drugs and their origins.
- *Production of and uses of monoclonal antibodies.*
- *Detecting and identifying plant disease.*
- *Plant defence responses – physical, chemical and mechanical adaptations.*

Bioenergetics

- Photosynthesis – the equation, rate, limiting factors, greenhouses and use of glucose.
- Respiration – types of respiration (aerobic and anaerobic), the equations, the purpose of respiration and uses of the energy generated.
- The body's response to exercise and metabolism.

Required Practicals

- Use of the light microscope.
- *Testing the effect of antibiotics on bacterial growth.*
- Effect of a range concentrations of salt/sugar on the mass of plant tissue
- Testing for carbohydrates, lipids and proteins.
- Effect of pH on the amylase enzyme
- The effect of light on photosynthesis of aquatic plants.

Biology Paper 2

Homeostasis & Response

- Homeostasis – automatic control systems in the body.
- Structure and function of the human nervous system.
- *The brain – structure, studying the brain and difficulties.*
- *The eye – structure, eye defects and correcting eyesight.*
- *Controlling body temperature – monitoring, being too hot/too cold.*
- Human endocrine system – endocrine glands and control of blood glucose.
- *Regulating water and nitrogen levels – kidneys, dialysis and digestion of proteins.*
- Hormones in human reproduction – the menstrual cycle, contraception and fertility treatment.
- Negative feedback.
- *Plant hormones – tropisms, auxins and gibberellins.*

Inheritance, Variation & Evolution

- Sexual and asexual reproduction – *advantages and uses of reproductive strategies.*
- Meiosis.
- Uses of the human genome.
- *DNA structure – nucleotide, double helix and codon structure.*
- *Protein synthesis.*
- *Mutations – silent mutations and non-coding DNA.*
- Genetic inheritance – punnet square diagrams of single gene trait, inherited disorders and embryo screening.
- Variation.
- Evolution – the process of natural selection.
- Selective breeding – selective breeding process, examples and evaluation.
- Genetic engineering - genetic modification, uses of GM in medicine and crops.
- *Cloning – adult cell cloning.*
- *Theory of evolution – Darwin, Lamarck and current evidence.*
- *Speciation.*
- *Understanding of genetics – Mendel and gene theory.*
- Fossils.
- Extinctions.
- Resistant bacteria – evolving antibiotic resistance, developing antibiotics.
- Linnaean classification – three domain system, why a new model was needed.
- Evolutionary trees.

Ecology

- Communities – habitats, ecosystems and competition.
- Biotic and abiotic factors.
- Adaptions.
- Levels of organisation – food chains and predator prey cycles.
- Sampling - quadrats and transects.
- How materials are cycled – water and carbon cycles.
- *Decomposition – rate of decay, compost and anaerobic decay.*
- *Impacts of environmental change.*
- Biodiversity – maintaining and benefits of biodiversity.
- Waste management – use of resources and pollutants.
- Land use – reducing land, deforestation and peat bogs.
- Global warming.
- *Trophic levels and pyramids of biomass.*
- *Factors affecting food security – threats, farming techniques, sustainable fishing and biotechnology.*

Required Practicals

- Effect of a factor on human reaction time.
- *Effect of light or gravity on the growth of newly germinated seedlings.*
- Measure population size of a common species in a habitat. Use sampling techniques to investigate the distribution of a species.
- *Effect of temperature on the rate of decay of milk by measuring pH.*